

# RESEARCH WEEK 2025

**February 10–14, 2025**

## **ABSTRACT BOOK**

Poster walkthroughs and virtual bioart gallery on demand:  
[okla.st/chs-research-days](https://okla.st/chs-research-days)



[medicine.okstate.edu](https://medicine.okstate.edu)



OFFICE OF  
**RESEARCH**  
OSU Center for Health Sciences

## Table of Contents

Agenda .....	3
Speaker List .....	5
Oral Presentations .....	11
Notes .....	19
Poster Presentations .....	20
Notes .....	135
Acknowledgements.....	137

Every effort has been made to ensure the accuracy of the information in this booklet. Changes in circumstances *after* the time of publication may impact the accuracy of this information. We apologize for any errors.

# Research Week 2025 Agenda

## Monday

February 10

**Grant Writing Workshop**  
**Grantsmanship: Strategic Proposal Development**  
**Fundamentals**  
*Nani Pybus, PhD*  
*Oklahoma State University*

NH 437 – 10 am – 12 pm

## Tuesday

February 11

**Educational Session:**  
**Advanced Pipette Techniques**  
*John R Veloria, M.Sc.*  
*Laboratory Consumables Representative*  
*Thermo Fisher*

E 378 – 12 pm  
*Lunch provided*

## Wednesday

February 12

**Educational Session:**  
**Statistics for Busy Practitioners**  
*Jon Glover, PharmD*  
*Sr. Director / DoD & VA Accounts Medical Lead*  
*Pfizer*

NH 437 – 12 pm  
*Lunch provided*

## Thursday

February 13

**Student Research Panel:**  
**Discussing the journey of students in research**  
*Biomedical Sciences Graduate Student Association*

NH 437 – 11 am

**Research at the Speed of Light:**  
**Faculty Lightning Talks**

NH 437 – 12 pm  
*Lunch provided*

**Oral Presentations**  
*Every 20 minutes*

NH 437 – 1 pm – 4 pm  
Zoom ID: 383 256 2536  
PC: gE6Ajc  
*Refreshments provided*

**Friday**

**February 14**

**Authorship in Biomedical Research;  
Navigating Ethical Challenges and Best Practices**

*Evan Mayo-Wilson, DPhil  
Associate Professor  
Department of Epidemiology  
University of North Carolina  
Gillings School of Global Public Health*

Virtual – 11 am  
Zoom ID: 383 256 2536  
PC: gE6Ajc

**Building Community Through Research: Pathways to  
VA-OSU Collaborative Research Partnerships**

*Associate Chief of Staff/Research & Development  
Eastern Oklahoma VA Health Care System  
River Smith, PhD &*

Tandy 411 – 12 pm  
Zoom ID: 886 202 5162  
PC: gE6Ajc

*Lunch provided*

*Executive Director, Veterans Research and Education  
Foundation  
Evan Erwin*

**Poster Presentations**

Poster Session A: 1:00 pm - 2:30 pm  
Poster Session B: 2:30 pm - 4:00 pm

Tandy Conference Center  
*Refreshments provided*

**Student Research of the Year Award Presentation:**

*Dean, Cherokee Nation Campus,  
Natasha Bray, PhD &*

Tandy Conference Center  
2:30 pm

*Vice President for Research  
Dawn Underwood, PhD*

**Research Week 2025 Award Presentation:  
Oral & Poster Excellence Awards**

*Vice President for Research  
Dawn Underwood, PhD*

Tandy Conference Center  
2:45 pm



OFFICE OF  
**RESEARCH**  
OSU Center for Health Sciences

## Grantsmanship: Strategic Proposal Development Fundamentals

**Nani Pybus, Ph.D.**

Oklahoma State University



Dr. Pybus is a longtime instructor of the PhD seminar course Special Topics in Grantsmanship at Oklahoma State University. Prior to retirement, she provided strategic proposal development and grant writing services for more than twenty years to research faculty across OSU on behalf of the office of the Vice President for Research. Dr. Pybus received her B.A. Magna Cum Laude, in Linguistics (with Distinction), from the University of Rochester in 1979 and an M.A. in English from Oklahoma State University in 1986. She received her Ph.D. in History (U.S. West) at Oklahoma State University in 2009. Dr. Pybus is also a Certified Research Administrator.

Previously, Dr. Pybus was a Foreign Service Officer with the United States Department of State. She served overseas in postings across the Middle East, Eastern Europe, and Europe and received multiple Meritorious and Superior Honor awards. Dr. Pybus has also served as Principal Investigator for Oklahoma State University on a USAID-funded project delivering educational programming in Iraq. In addition to various other organizations, Dr. Pybus currently serves on the board of trustees for World Neighbors, one of the oldest international development organizations in the United States.

## **Advanced Pipette Demonstration**

**John Veloria, MS.c.**

Director, Cardiology & Metabolism Team  
**Thermo Fisher Scientific**



John has at least 7 years of experience as a Sales Representative for Thermo Fisher Scientific. He currently supports our consumables and labware portfolios across all industries including clinical, biotechnology, healthcare, food/agriculture, academic, industrial, manufacturing, and pharmaceutical accounts.

John enjoys utilizing his technical background to support his clients and their needs in research, manufacturing, development, production, diagnostics, OEM, and clinical applications.

## **Statistics for Practitioners**

### **Jon Glover, Pharm.D.**

Director, Cardiology & Metabolism Team  
**Pfizer, Inc.**



Jon Glover, PharmD is the Senior Director and Medical Lead for DoD/VA/Kaiser in Western US with Pfizer Medical. Jon received PharmD from U of AZ and completed Residency at a VA in Tucson. Jon supports outcomes and analytics projects for colleagues across the country as well as residency programs he supports in Western US, as well as Banner in AZ.

## **Authorship in Biomedical Research; Navigating Ethical Challenges and Best Practices**

**Evan Mayo-Wilson, D.Phil**

University of North Carolina



Evan Mayo-Wilson, DPhil, MPA, is an Associate Professor in the Department of Epidemiology at the University of North Carolina Gillings School of Global Public Health. He has expertise in intervention design and evaluation, and the translation of clinical evidence into policy and practice.

Dr. Mayo-Wilson's research aims to improve public health and to advance methods for conducting health and behavioral research. He focuses on (1) evaluating the effectiveness of pharmacological and behavioral interventions; (2) improving methods for clinical trials and systematic reviews; and (3) developing methods and interventions to increase research transparency and openness.



## **Building Community Through Research: Pathways to VA-OSU Collaborative Research Partnerships**

### **River Smith and Evan Erwin**

Eastern Oklahoma VA Health Care System



Dr. Smith is a clinical psychologist and the Associate Chief of Staff for Research and Development at the Eastern Oklahoma VA Healthcare System. She earned her PhD from the University of Tulsa and was a VA funded intern and postdoctoral fellow. Dr. Smith has devoted the majority of her career to providing clinical interventions to Veterans with Posttraumatic stress disorder. As a clinical health service psychologist, her experience delivering clinical interventions on the PTSD clinical team for 16 years has uniquely contributed to her understanding of the complexities of trauma within the Veteran population. She is a national consultant for the Cognitive Behavioral Therapy for Insomnia training program. She is a member of the Data Management and Quality Improvement Workgroup for the National PTSD Mentorship and Implementation Program. Dr. Smith is currently charged with developing a robust human subjects research program at Eastern Oklahoma VA. Her research career began as a graduate student working in several university research labs where she became familiar with human subjects research. She has served in various key study personnel roles from study assessor to principal investigator. She is the chair for the Office of Research and Development Small Sites Workgroup and serves as member of the small sites steering committee. She is currently principal investigator on several VA data studies examining the impact of trauma on physical and mental health outcomes. In addition, she has served as local site investigator for the Million Veteran Program. Dr. Smith has three children and enjoys spending her free time hiking the Buffalo National River area.



Evan is a healthcare professional with a diverse background encompassing military service, emergency medicine, and nonprofit leadership. He began his career as a combat medic in the U.S. Army where he also served as a Blackhawk First Responder Infantry instructor after his initial deployment. His commitment to supporting veterans led him to an internship in the Director's Office at the Oklahoma City Veteran Affairs Medical Center while pursuing a dual degree in biology and forensics. After completing his internship, Evan was appointed Executive Director of the Veterans Research and Education Foundation, a nonprofit organization conducting human and animal clinical trials in pharmaceuticals and medical devices. Under his leadership, the foundation, headquartered in Oklahoma City, expanded by establishing two additional sites in Tulsa, Oklahoma, and Fayetteville, Arkansas. These sites earned the capability to conduct National Cancer Institute trials, and his efforts have significantly increased veteran patient coverage across Oklahoma. Evan currently serves on the planning committee for the National Association of Veterans Research and Education Foundations (NAVREF), a research member association comprising 79 sites nationwide that generated over \$300 million in research revenue for the U.S. Department of Veterans Affairs in 2024. In September 2024, NAVREF successfully advocated for a one-year delay in the implementation of a new interpretation of 18 USC Section 208, protecting veterans' research opportunities while collaborating with the Friends of VA Research Executive Committee. Outside of his professional work, Evan enjoys weightlifting and, if traveling, ultralight backpacking. He is married, has three children, and maintains a strong commitment to family life.

Colin Boisvert, Brooks B. Britt, PhD, Kent Stevens, PhD, Rod Scheetz, PhD

Colin Boisvert, Graduate Student; coboisov@okstate.edu

### **A long neck for low browsing: Modeling a Utah dinosaur's neck using physical and virtual models**

Sauropods, the largest of all dinosaurs, are renowned for their extraordinarily long necks. A neck's osteological neutral pose, or ONP, occurs when all neck joints are undeflected, with maximal overlap between zygapophyses. Sauropod neck ONP can assist in determining feeding envelopes for different sauropods, and potential diet differentiation in the sauropod-rich Late Jurassic Morrison Formation (up to seven giant sauropods).

Scientists have used virtual models to test hypotheses for upright sauropod necks like birds, or more horizontal like some mammals. Sauropod fossils are usually either missing neck bones, or their bones have been geologically distorted. A large (2-m-wide pelvis, 1.7-m-long femur) specimen of *Brontosaurus parvus* from Utah (BYU 18531) with a relatively complete neck provides an opportunity to model ONP from the second cervical to the fourth dorsal vertebra.

The specimen's cervical vertebrae were rendered in 3D using photogrammetry (C2-C13) and CT scans (C14-D1; North Star Imaging, California). Modeled vertebrae were articulated virtually (Autodesk Maya) and compared with a physical rig of scaled-down, 3D printed models.

Results with both models indicated a sinusoidal dropping neck with the head close to the ground, based on an angle of zero for D1. Previously hypothesized neck articulations (straight horizontal or S-shaped), tried virtually and physically, led to disarticulated vertebrae.

These results indicate BYU 18531 was likely feeding on ground-growing vegetation. Future research includes neck range of motion and the feeding envelope for BYU 18531. This research will provide insights into how so many large-bodied animals could coexist in Late Jurassic North America.

Keywords: Dinosaurs, Sauropods, Biomechanics, Apatosaurus

Abdullah Gohar, MSc, Holly Woodward, PhD, Mohamed Antar, PhD, Sanaa El-Sayed, MSc, Hesham Sallam, PhD

Abdullah Gohar, MSc, Graduate Student; [abdullah.gohar@okstate.edu](mailto:abdullah.gohar@okstate.edu)

### **Tracing the Bite: Dental histology and feeding evolution in early whales**

**Introduction/Objectives:** The land-to-water transition significantly transformed cetacean anatomy, particularly the cranium and feeding apparatus. While early whale (archaeocetes) fossils are crucial in understanding cetacean evolution during the Eocene, their dental histology remains poorly understood. Dental histology of archaeocete whales can infer tooth development, lifespan, birth age, and life history, shedding light on their feeding strategies and ecological adaptations.

**Methods:** Here, we examine the paleohistology and microstructure of teeth in archaeocete whales, including protocetids (*Phiomicetus anubis*, lower incisor and molar) and basilosaurids (*Dorudon atrox*, lower molar; *Masracetus markgrafi*, lower and upper molars) from the middle to late Eocene of the Fayum Depression, Egypt. Teeth were embedded in epoxy resin, sectioned longitudinally in a buccal-lingual plane, polished, and scanned for microscopic analysis.

**Results:** All archaeocete teeth examined exhibited relatively thicker enamel compared to modern toothed cetaceans. Enamel thickness measurements revealed distinct patterns, with *P. anubis* lower incisor enamel measuring 870  $\mu\text{m}$  and first lower molar enamel measuring 750  $\mu\text{m}$ , compared to 981.71  $\mu\text{m}$  in *D. atrox* lower molar and 1235.72  $\mu\text{m}$  in *M. markgrafi* lower molar. The enamel thickness patterns suggest that *P. anubis* had a generalized feeding strategy, while the thicker enamel in basilosaurids suggests adaptations for specialized feeding. Notably, all archaeocete teeth exhibited well-developed Hunter-Schreger bands (HSB), a feature not present in most living odontocetes except for the Amazon River dolphin (*Inia geoffrensis*). Furthermore, Growth Layer Groups (GLGs) were identified in all studied dental tissues (enamel, dentin, and cementum), including the neonatal line (NNL), striae of Retzius, lines of von Ebner, and lines of Owen.

**Conclusions:** Unlike modern odontocetes, which have simplified homodont teeth or are edentulous, archaeocetes retained complex, heterodont teeth with moderately thick enamel, highlighting a degree of prey processing. Moreover, the presence of well-developed HSB, enamel tufts, and thick enamel in archaeocete teeth suggests adaptations to high occlusal loads during raptorial feeding. These features likely enhanced resistance to tooth wear and fractures, promoting tooth longevity. Our findings support a transition from generalized feeding in protocetids to more specialized feeding in basilosaurids, in parallel with their transition to a fully aquatic lifestyle. Future research will examine additional archaeocete and neocete (modern cetacean) specimens to further elucidate the patterns of dental evolution in cetaceans and the role of phylogenetic and functional constraints on dental histology and feeding biomechanics.

**Keywords:** archaeocete whales, enamel thickness, Hunter-Schreger bands, feeding biomechanics, dental histology

Gwen Grant, BS, Crystal N. Johnson, PhD

Gwen Grant, BS, Graduate Student; greilly@okstate.edu

### **Whole Genome Exploration of *Erysipelomicrotus*, a novel genus belonging to the family, Erysipelotrichaceae**

**Introduction/Objectives:** Commensal bacteria produce a vast array of bioactive metabolites critical for gut homeostasis, yet their essential contribution to shaping an immunotolerant microenvironment in the intestinal tract is not fully understood. Moreover, our understanding of the bacteria comprising the human microbiome has been limited by a collective difficulty growing such fastidious organisms for mechanistic studies.

**Methods:** The application of specialized anaerobic techniques has led to the isolation and identification of three strains of a new bacterium, for which we propose the name *Erysipelomicrotus*, which represents a novel bacterial genus. These isolates were cultured under strict anaerobic conditions to maintain their viability and functional characteristics, ensuring a more accurate representation of their natural metabolic and phenotypic profiles.

**Results:** Subsequent NCBI BLAST analysis of the 16S rRNA gene sequence confirmed the uniqueness of the isolates, revealing taxonomic identities not matching to previously described microbiota. The closest *known* phylogenetic relative identified in the analysis was *Dubosiella newyorkensis*, a species that has recently garnered attention for its promising potential as a next-generation probiotic. *D. newyorkensis* is emerging as a probiotic candidate with a variety of health-promoting benefits, including weight loss, cognitive function enhancement, and liver protection, particularly in individuals suffering from Non-Alcoholic Fatty Liver Disease (NAFLD). To fully understand the biological characteristics of these isolates, a comprehensive polyphasic approach was employed. This included detailed biochemical assays and phenotypic characterization to evaluate growth conditions, enzymatic activities, and other physiological traits. These findings provided an in-depth understanding of the organisms' metabolic properties, laying the foundation for further investigation into its probiotic capabilities. To gain insight into the functional potential of these novel isolates, whole genome sequencing was performed. The resulting genomic data was assembled *de novo* and annotated using command line in Linux with various bioinformatic-tools. *In silico* genome mining revealed valuable information on the organisms' metabolic pathways, the presence of antibiotic resistance genes, and potential for secondary metabolite production. Furthermore, analysis of the genome highlighted the organisms' supporting role in health applications such as gut microbiota modulation, immune enhancement, and treatment of metabolic disorders.

**Conclusion:** The potential for *Erysipelomicrotus* to produce bioactive metabolites may offer new opportunities for developing targeted probiotic therapies to support metabolic health and prevent chronic diseases. These findings pave the way for further investigation into the therapeutic roles of this newly identified bacterium and its contributions to gut homeostasis and immune regulation.

**Keywords:** *Erysipelomicrotus*, anaerobic, next-generation probiotic, whole genome sequencing, genome mining

Forrest LaFleur, MS, Stephanie Myers, PhD, Garrett Lorenz, MS, Kelly Dunn, MD, Bidhan Lamichhane, PhD, Florence Breslin, MS, Katie Thompson, LMSW, Erin Ratliff, PhD, W. Kyle Simmons, PhD

Forrest LaFleur, MS, Graduate Student; forrest.lafleur@okstate.edu

### **Human Neurobiological Evidence of Alcohol Salience Misattribution**

**Introduction:** It is widely believed that as an individual descends into addiction, drug-related stimuli begin to take on relatively more motivational power, or salience, than non-drug-related rewards. This concept, known as salience misattribution, is thought to reflect the tuning of the brain's reward neurocircuitry toward drug cues that predict greater hedonic reward or allostatic relief from withdrawal, rather than non-drug reward cues. Surprisingly, despite its theoretical importance and preclinical evidence in rodents, salience misattribution has not been empirically demonstrated in humans. Using functional Magnetic Resonance Imaging (fMRI) and alcohol and food cue reactivity paradigms, this study provides neurobiological evidence that salience misattribution for alcohol cues increases with increasing alcohol use disorder (AUD) symptom severity.

**Methods:** Adult participants (n=77) with varying alcohol consumption and alcohol use disorder identification test (AUDIT) scores ranging from 1-31 (maximum possible score: 40) were included in the study. Participants underwent blood oxygenation level-dependent (BOLD) fMRI while completing two sequential cue reactivity tasks: one involving alcohol and non-alcohol beverage stimuli, and another involving food and non-food stimuli. Preprocessing was performed using a standard Analysis of Function NeuroImages (AFNI) pipeline. Task BOLD signal contrasts were calculated separately to determine the differential motivational salience for alcohol rewards versus non-alcohol beverages independent from food rewards versus non-food stimuli, rather than comparing drug reward (alcohol) directly to non-drug reward (food). The independent contrasts were used to calculate the Salience Misattribution Index (SMI) defined as the difference between alcohol and food salience contrasts: (alcohol-beverage)-(food-object). A single sample t-test using AFNI's 3dttest++ program identified brain regions where SMI changes correlated with changes in AUDIT score.

**Results:** Higher AUDIT scores were associated with increased SMI values in the anterior cingulate cortex, left ventral striatum, right anterior insula, and right orbitofrontal cortex. These findings suggest that as alcohol dependence progresses, alcohol related stimuli gain motivational salience, while food-related stimuli lose motivational salience in important brain regions involved in reward and appetitive behaviors.

**Conclusions:** This study provides the first direct neurobiological evidence of salience misattribution for alcohol cues in humans. Key reward-related brain regions prioritize alcohol stimuli while simultaneously deprioritizing food rewards as alcohol dependence deepens. Although previous research has focused on the connection between deepening addiction and habituation of drug-seeking, our findings show the effect addictive reward has on other non-drug rewarding stimuli. Specifically, these results elucidate reasons why drug dependent individuals may be motivated to seek drug rewards over other rewards that potentially hold higher subjective value due to their lower motivational salience. Future research should leverage SMI to examine the interplay between the subjective reward value and motivational salience in dependent populations.

**Keywords:** fMRI, AUD, addiction, neuroimaging

Garrett Lorenz, MS, Forrest Lafleur, MS, Stephanie Myers, PhD, Bidhan Lamichhane, PhD, Erin Ratliff, PhD, Katie Thompson, LMSW, Kelly Dunn MD, Kyle Simmons PhD

Garrett Lorenz, MS, Graduate Student; garrett.lorenz@okstate.edu

### **The Ventral Striatum Mediates the Effect of Alcohol Use On Motivational Salience**

**Introduction:** According to the incentive salience sensitization theory (ISST) of addiction, exposure to addictive substances sensitizes the ventral striatum to drug cues, imbuing those cues with greater motivational salience, and thereby promoting future drug use. The vast majority of research supporting ISST has been conducted in rodents, with surprisingly little data in humans demonstrating that ventral striatum activity links prior drug use to the motivational salience of drugs encountered in the real world. Here we provide this evidence.

**Methods:** During an in-person visit to the OSU Biomedical Imaging Center (OSUBIC), participants reported via the Timeline Follow-back (TLFB) methodology the number and type of standard alcoholic beverages consumed each day over the past 28 days, as well as completed an alcohol/non-alcohol beverage photograph cue reactivity task while undergoing functional Magnetic Resonance Imaging (fMRI). Subsequently, after leaving OSUBIC, participants completed a self-control rating survey administered via their mobile phone immediately prior to consuming an alcoholic beverage. The survey allowed us to assess the motivational salience of alcohol in a real-world setting. Thirty-two adult participants (10 males, 22 females, age =  $34.59 \pm 1.83$ ) completed the scan and motivational salience survey. Voxelwise group analyses in AFNI were used to evaluate the relationship between brain activity to alcohol cue reactivity and alcohol self-control/motivation ratings. Additionally, ventral striatum fMRI activity, 28-day TLFB, and self-control/motivation ratings subsequently measured outside the lab were entered into mediation analyses in R.

**Results:** After correction for multiple comparisons, the bilateral ventral striatum was the only brain region where activity correlated with participants' alcohol motivation scores measured subsequently in real-world settings ( $p = 0.001$ ). We also observed a positive correlation between the amount of alcohol a participant drank over the prior 28 days and their real-world alcohol motivation scores ( $p = 0.002$ ). Subsequent mediation analyses demonstrated that ventral striatum alcohol cue reactivity mediated the relationship between the number of standard alcoholic beverages consumed in the previous 28 days and the subsequent motivational salience of an alcoholic beverage encountered outside the lab ( $p = 0.02$ ).

**Conclusion:** The ventral striatum mediates the relationship between the number of alcoholic beverages consumed in the past month and the motivation to drink one experiences in the presence of an alcoholic beverage. These findings are consistent with an ISST account wherein higher alcohol consumption sensitizes the ventral striatum to respond more robustly to alcohol cues, thereby increasing motivation to consume subsequently encountered alcoholic beverages, presumably accelerating the development of alcohol addiction. The methods and findings of the present study may provide a novel marker in humans of the efficacy with which future addiction medicine pharmacotherapies disrupt the relationship between prior alcohol use and the experience of alcohol wanting in the real world.

**Keywords:** Ventral Striatum, Alcohol, Addiction, Mediation, Motivational Salience, Incentive Salience Sensitization Theory

Anna Place, BS, R. Hunt, BS, Stephanie Van Nortwick, PhD, Jennifer Brummett, MLIS,  
Micah Hartwell, PhD

Anna Place, BS, Medical Student; [anna.place@okstate.edu](mailto:anna.place@okstate.edu)

### **Malnutrition and micronutrient deficiencies and associated determinants among children living in Afghanistan: A scoping review**

**Background:** For over two decades, Afghanistan has been a center for war, political conflict, violence, and humanitarian crises. Due to sociopolitical and environmental challenges, nearly 50% of children in Afghanistan suffer from malnutrition and two million children are in need of urgent nutritional treatment. Malnutrition in children is critical to address as it hinders physical growth and impairs cognitive development. Thus, we aimed to assess the breadth of literature regarding malnutrition and micronutrient deficiencies, determine gaps in the literature, and summarize factors most relevant to malnutrition among children in Afghanistan.

**Methods:** A scoping review was conducted using the PubMed, Embase, and Cochrane databases for peer-reviewed articles assessing malnourishment in Afghanistan published between January 1, 2015, through July 23, 2024. Two reviewers independently reviewed abstracts and full-text articles and the resulting articles were included in the literature review. This study adhered to the framework and methodology proposed by Peters et al., within the Joanna Briggs Institute.

**Results:** Among 24 included articles, stunting, wasting, undernutrition, and underweight represented the four most common physical measures related to malnutrition and starvation. Micronutrient deficiencies discussed in the articles were Vitamin A and D, iodine, zinc, and iron deficiency/anemia. Armed conflict, low socioeconomic status, lack of water, sanitation and hygiene, and parental demographics were the most common determinants noted as contributors. While many studies proposed plans and policies to address malnutrition, few studies reported on the impact of these programs—a notable gap in the literature.

**Conclusions:** This scoping review identified the most common measures evaluating malnutrition among children in Afghanistan and provided a categorized list of exacerbating factors mentioned within the articles. This study revealed that in addition to addressing the issues contributing to childhood malnutrition, precise and accurate data about nutrition programs must be gathered to evaluate plans and policies and guide future endeavors to resolve childhood malnutrition. However, malnutrition in Afghanistan is a complex problem with many contributing factors and no simple solution.

**Keywords:** children, malnutrition, Afghanistan, vitamin, mineral, deficiency



Madison Reese, BS, Niamh Dixon, BS, Levi Carrico, MS, Monica Denigan, PA-C, Rebekah Elliot, BS, James Whitney, PhD, Anuradha Ghosh, PhD

Madison Reese, BS, Medical Student; madison.reese@okstate.edu

### **Prevalence and characterization of antibiotic-resistant strains of *Enterococcus* spp. and *Acinetobacter* spp. in the household environment**

**Introduction/Objectives:** With the increasing prevalence of antibiotic resistance threats, there is an upsurge in community-acquired infections. This study aimed to assess the prevalence of *Enterococcus* spp. and *Acinetobacter* spp. (that are well-known antibiotic-resistant nosocomial pathogens) in the household environment.

**Methods:** A total of 30 kits, each containing five swabs for each shoe bottom, restroom, cleaning supply, kitchen top, and doorstep/door handles (n=150) were processed using the enrichment technique.

**Results:** Twenty-two out of 30 (73%) and 28/30 (93%) kits were positive for the growth of *Enterococcus* spp. and *Acinetobacter* spp., respectively. Doorsteps, cleaning supplies, and shoe soles (13-20%) were less frequently contaminated with enterococci compared to that of kitchen tops (53%) and restrooms (40%). The majority of the locations swabbed were contaminated with *Acinetobacter* spp. except for doorstep/doorhandles. Overall, 102/150 (68%) of the swabbed surfaces were contaminated with *Acinetobacter* spp. in contrast to 43/150 (28%) with enterococci. Biochemical tests confirmed 34% (140 out of 408) *Acinetobacter* identity and 71% (123/172) *Enterococcus* isolates at the genus level. Disk-diffusion antibiotic susceptibility testing revealed 41 of each of *Acinetobacter* and enterococcal isolates were resistant to 3-6 antibiotics. Multi-drug resistant isolates were further confirmed using species-specific PCR and were tested for biofilm formation, and the presence of amylase and protease.

**Conclusions:** Whole genome sequencing of nineteen selected isolates have been performed and analysis of those sequences is in progress. The community will be reached out with recommended cleaning protocol and antimicrobial stewardship program. The outcome of this study may help facilitate effective and appropriate antibiotic treatment against community-acquired infections.

**Keywords:** nosocomial infections, household, cleaning procedure

Forrest Valkai, MA

Forrest Valkai, MA, Graduate Student; forrest.valkai@okstate.edu

### **Biomed Beyond Binaries: Establishing New Language Guidelines for Communication and Research Regarding Sex and Gender**

**Background:** The fields of biology and medicine are united within biomedical sciences. As such, research and communication in this discipline rely on precise language to address the complexities of human diversity in a way that both adheres to scientific accuracy and supports human wellbeing. Traditional frameworks of sex and gender often fall short in this cause, leading to oversimplifications that both hinder research and harm intersex, transgender, and gender-diverse communities. Key findings in biology, anthropology, psychology, neuroscience, and medicine over the last century reveal the non-binary nature of biological sex, the cultural components of gender, and the dynamic interplay between genetics, hormones, and environment which leads to diverse phenotypes.

**Methods:** A comprehensive literature review was carried out to explore the biological, cultural, and social dimensions of sex and gender.

**Results:** Modern evidence challenges binary models and emphasizes the importance of acknowledging the spectrum of human variation while conducting research and communicating science to the general public. Best practices in physical and mental healthcare underscore the importance of adopting inclusive language and methodologies to better represent and address the needs of all individuals.

**Conclusion:** Reexamining and refining the language used in biomedical sciences is essential for fostering a more accurate and empathetic approach to both studying and teaching human diversity in science and medicine. By integrating inclusive methodologies and communication practices, the scientific community can more effectively support the wellbeing of all individuals while promoting a more accurate understanding of sex and gender in both academic and public spheres.

**Keywords:** sex, gender, inclusion

## NOTES

Daniel Archer, BS, **Noah Barks, BS**, Mahad Chaundry, BS, Brody Dennis, BS, Jacob Duncan, BA, Annes Elfar, BS, Taylor Gardner, BS, Eli Paul, BS, Micah Kee, DO, Alicia Ito Ford, PhD, Matt Vassar, PhD

Noah Barks, BS, Medical Student; nbarks@okstate.edu

### **Evaluating Data-Sharing Policies and Author Compliance in Leading Cardiology Journals**

**Objective:** To assess the prevalence, content, and application of data-sharing statements (DSS) in high impact cardiology journals.

**Background:** Cardiovascular disease (CVD) is a leading cause of global mortality. Significant investments are made in CVD research, underscoring the need for high-quality research. Data-sharing is essential to advance medical research by enhancing transparency and accountability. Despite its importance, adherence to DSS in published manuscripts remains inconsistent.

**Methods:** A comprehensive literature search in MEDLINE (PubMed) identified clinical studies published in five of the top cardiology journals between January 1, 2020, and December 31, 2023. Data extraction was performed using a standardized form in a masked, duplicate manner, and hierarchical logistic regression was applied to identify influential characteristics related to the inclusion of DSS. Furthermore, a qualitative analysis was conducted to describe common themes in statements, and corresponding authors were contacted to assess their willingness to share data.

**Results:** Of the 1,116 articles meeting inclusion criteria, 477 (42.74%) included a DSS. Clinical trials had a higher rate of DSS (48.17%) compared to cohort studies (29.25%). Journals with higher impact factors were more likely to include DSS. The most common theme in DSS was the "gatekeeper" role, where data access requires contacting an entity. Only 27.68% of authors responded, with less than a third willing to share data. Higher impact factor, open access status, and blended funding sources positively influenced DSS inclusion.

**Conclusion:** While the prevalence of DSS in cardiology research is increasing, significant gaps remain. Enhancing transparency and reproducibility in cardiology research will require overcoming barriers to data-sharing and ensuring that DSS commitments are upheld. Furthermore, journals and funding agencies should enact and enforce more stringent DSS policies or explore the use of Transparency and Openness Promotion (TOP) Guidelines as a framework for data-sharing practices.

**Keywords:** Data-Sharing, Cardiology, Reproducibility, Transparency

Delaney Archer

Delaney Archer, Graduate Student; delaney.archer@okstate.edu

### **The Effect of Oral Contraceptive Pills on Performance Capacity: A Critically Appraised Topic**

Clinical Scenario: Oral contraceptive pills are widely used among women to prevent pregnancies and help control symptoms associated with the menstrual cycle. Female athletes using these contraceptives may be susceptible to lower athletic performance because of the effects of the added hormones.

Clinician Question: In elite female athletes, how do oral hormonal contraceptives affect performance capacity?

Findings: A search was conducted on research regarding the relationship between oral contraceptives and female athletic performance, specifically affecting strength, power, endurance, and fatigue. Cabre et al.<sup>27</sup> studied fatigability, Dragutinovic et al.<sup>28</sup> looked at strength performance, neuromuscular fatigue, and perceived exertion, while Mathy et al.<sup>29</sup> looked at maximal and submaximal endurance parameters.

Bottom Line: Evidence shows that oral contraceptive pills do not affect female performance in any of the strength, power, endurance, and fatigue testing conducted. Future research should include range of motion and flexibility within the muscles during different hormonal phase cycles and studying performance during on/off seasons for sports.

Keywords: Oral hormonal contraceptives, Elite female athletes, Performance, Blood lactate

Alex Baldrige, BS, Eddy Bagaruka, BS, Eli Paul, BS, Chance Bratten, BS, Matt Vassar, PhD

Alex Baldrige, BS, Medical Student; alex.baldrige@okstate.edu

### **Evaluating the Usefulness of Randomized Clinical trials in Prostate cancer screening: A Systematic Review**

**Background:** Prostate Cancer screening plays a crucial role in identifying the second leading cause of cancer-related deaths worldwide, with more than 1.2 million cases reported in 2018 alone. Effective screening methods aim to achieve early detection and prompt management, while limiting overdiagnosis and treatment. Randomized controlled trials serve as the gold standard for evaluating screening methods and form the foundation for developing screening guidelines. However, there is concern in the research community about accumulating waste in clinical literature as some of these studies lack critical elements necessary for reproducibility and validity. This study aims to evaluate both the usefulness and transparency of randomized controlled trials on prostate cancer screening, utilizing a previously published 13-item usefulness criteria developed by van 't Hooft et al. The goal is to ultimately evaluate the overall utility of the trials.

**Methods:** This systematic review analyzes the 13 criteria in 147 RCTs on prostate cancer screening identified through PubMed and Embase published between 1994 and 2024. Articles were screened in a double blind, masked fashion by two examiners, with discrepancies resolved by a third examiner. The usefulness criteria that were assessed were scored on a point system, with 0-2 points available for each item leading to a total possible score of 26. Statistical analysis included descriptive statistics on the number and proportion of criteria met, along with linear regression plots comparing the sum of the satisfied usefulness criteria over time with the sum of transparency criteria met over time.

**Results:** Ninety-five percent of studies scored within the lower two thirds of the total 26-point scale, with a mean score of 10.3. Criteria such as problem-base (n=144, 98%) scored highly in terms of satisfaction while key areas like patient-centeredness (n = 68, 46.3%) and information gain (n=103.0 70.1%) were largely absent in most of the studies. Regarding the transparency criteria, there was generally low satisfaction, as indicated in absence of preregistration (n=111.0, 75.5%), and publicly published protocols (n=130, 88.4%). However, overtime there is an upward trend in satisfaction of both usefulness and transparency ( $r = 0.21$ ,  $p = 0.010$ ) criteria with a greater positive correlation between the sum of transparency criteria overtime.

**Discussion:** Although there are areas within these clinical trials that satisfy the usefulness criteria, significant gaps remain, contributing to literature that lacks reproducibility, generalizability or validity. Existing transparency guidelines may explain the observed upward trend of satisfaction over time. However, it has become clear that incorporating the usefulness criteria is essential to further improve the effectiveness of clinical trials and reduce waste. The application of the usefulness criteria has shown its ability to identify areas of weakness and potentially aid in the development of future guidelines during the planning phase of clinical trials.

**Conclusion:** This study emphasizes the importance of incorporating standardized usefulness assessment tools, like the one studied, to optimize resources in clinical trial development and information reporting, ultimately improving the effectiveness of screening for life-threatening cancers.

**Level of Evidence:** Level II

**Keywords:** Usefulness criteria, transparency, prostate cancer screening, waste in clinical literature, systematic review, randomized clinical trial, Prostate specific antigen (PSA)

Svetlana Bobkova, MD, MS, Brandon Curry, BS, Craig W Stevens, PhD, Amanda Wunsch, PhD, Craig T. Werner, PhD

Svetlana Bobkova, MD, MS, Staff; sbobkov@okstate.edu

### **Fentanyl Administration in Mice: A Comparative Study of Method Vapor Self-Administration vs Intraperitoneal Injection**

**Introduction:** The synthetic opioid crisis, particularly involving fentanyl, has led to a dramatic surge in overdose deaths in the United States, with over 70,000 fatalities in 2021. Oklahoma reflects this trend, reporting 1,196 overdose deaths in 2022—a record rate of 30 per 100,000 residents. Fentanyl-related deaths in the state skyrocketed from 47 in 2019 to 300 in 2022. This crisis underscores the urgent need for advanced research into opioid use disorders and treatments. While the intravenous self-administration model in rodents is the current gold standard for studying opioid addiction, it presents challenges such as catheter placement difficulties and maintenance issues. To overcome these obstacles, a vapor self-administration model for fentanyl delivery is being considered as a promising alternative, potentially enhancing research efficiency and providing new insights into addiction mechanisms and therapeutic approaches.

**Objectives:** To determine if the pharmacodynamic of fentanyl via vapor self-administration was comparable to IP administration.

**Methods:**

- 96 naive mice were divided into 12 groups
- Fentanyl was administered through IP injections and vapor routes at equipotent doses
- The analgesic effect of fentanyl was evaluated using the hot-plate test

**Conclusion:** Hot-plate assays revealed equivalent analgesic effects in mice following fentanyl administration via intraperitoneal (IP) injection and passive vapor self-administration routes.

The vapor self-administration paradigm represents a significant innovation in preclinical addiction research, offering enhanced translational potential for investigating substance use disorders.

**Keywords:** Fentanyl; Vapor self-administration; Analgesia; Hot-plate test; Pharmacology

Mohammed Mazhar M Bombaywala, BSN, RN, BS, Priscilla Chatman, BS, Jordan Siegal, MS, Julie M Croff, PhD, W Kyle Simmons, PhD, Florence J Breslin, MS

Mohammed Mazhar M Bombaywala, BSN, RN, BS, Graduate/Medical Student;  
maz.bombaywala@okstate.edu

### **Hearts For Hearing – OSU Pediatric ImagiNG (HOPING) Clinical Registry**

Background information and rationale: Congenital hearing loss and deafness are connectome diseases that alter brain structure and function by disrupting the development of cortical connections. The **HOPING (Hearts For Hearing - OSU Pediatric ImagiNG)** Clinical Registry is a data repository for a clinical population of diverse children evaluated for cochlear implant candidacy at the OSU Biomedical Imaging Center.

The HOPING data collection protocol includes clinical MRI scans of the internal auditory canal (IAC) on each participant and additional research sequences that align with the national Healthy Brain and Child Development (HBCD) protocol. Harmonization of scan sequences as well as several self-report assessments allows for comparisons with a matched hearing sample collected at the same Center and on the same MRI scanner, as the HBCD phenotypic and MRI data are available for scientific research through NIH data sharing.

HOPING complies with all federal requirements and the OSU-CHS IRB policies and procedures. It follows 45 CFR 46 laws and regulations.

Study Primary Objective: To build an extensive repository of diverse population data from families and children experiencing hearing loss, including neuroimaging, biosamples, and questionnaire data indicative of child/parent biology and environment.

Study Methods: HOPING data collection includes neuroimaging, saliva sample collection for genetic analysis, and self-report questionnaires covering child and parent biology and environment. Each child has at least one parent or caregiver enrolled in HOPING but secondary caregivers, when available, are also asked to participate. Subject data collection can last up to 48 months. Initial enrollment begins at the clinical MRI appointment with parents completing additional remote assessments to cover the child's development at 6, 12, 18, 24, 36, and 48 months. For children over 6 months of age at time of enrollment, parents are asked to complete surveys retrospectively: one every 2 weeks, starting with developmental assessments in the first six months of life and progressing until parents reach assessments that match the child's current age.

Results: HOPING has enrolled 11 child-parent dyads. Average age of primary caregiver is 27, 75% are white, 12.5% Black, 12.5% American Indian/Alaska Native. 22.2% of the mothers reported alcohol consumption during pregnancy, with the majority reporting consumption before knowledge of pregnancy; while 11.1% reported marijuana use throughout pregnancy. Primary caregivers have an average ACEs score of 2.44, ranging from 0-10.

Conclusion: Clinical registries are an excellent way to obtain research data from our OSU Medicine patients, allowing for evaluation of broad areas of interest within the target population. Clinical registries expand our understanding of our patients' life experiences and environments, impacting their health, understanding of their healthcare services, and ability to comply with treatment. The goal of HOPING is to elucidate the environmental, behavioral, clinical, and neurological factors that not only impact hearing but also child development within their environment.

Keywords: Brain development, Hearing loss, Clinical registry.



Nick Boyne, BS, **Adam Khan, BA**, Alec Young, BS, Jared Van Vleet, BS, Alison Duke, BS, Matt Vassar, PhD

Adam Khan, BA, Medical Student; adam.khan@okstate.edu

### **Discrepancies in Safety Reporting for Chronic Back Pain Clinical Trials: An Observational Study from ClinicalTrials.gov and Publications**

**Introduction:** Chronic back pain (CBP) is a leading cause of disability worldwide and is commonly managed with pharmacological, non-pharmacological, and surgical interventions. However, adverse event (AE) reporting for these therapies often lacks transparency, raising concerns about the accuracy of safety data. This study aimed to quantify inconsistencies in AE reporting between ClinicalTrials.gov and corresponding randomized controlled trial (RCT) publications, emphasizing the importance of comprehensive safety reporting to improve clinical decision-making and patient care.

**Methods:** We conducted a retrospective analysis of Phase 2–4 CBP RCTs registered on ClinicalTrials.gov between 2009, when the submission of AE information became legally required, and 2023. Data extraction focused on AE reporting, trial sponsorship, and discrepancies in serious adverse events (SAEs), other adverse events (OAEs), mortality, and treatment-related withdrawals between registry entries and corresponding publications. Statistical analyses were performed to evaluate reporting inconsistencies, adhering to STROBE guidelines for observational studies.

**Results:** A total of 114 registered trials were identified, with 40 (35.1%) corresponding publications. Among these, 67.5% were industry-sponsored. Only 4 (10%) publications fully reported adverse events (AEs) without discrepancies, while 36 (90%) contained at least one inconsistency compared to ClinicalTrials.gov. Discontinuation due to AEs was explicitly reported in 24 (60%) of ClinicalTrials.gov entries and in 30 (75%) of publications, with discrepancies in 16 trials (40%). Serious adverse events (SAEs) were reported differently in 15 (37.5%) publications; 80% reported fewer SAEs than ClinicalTrials.gov. Other adverse events (OAEs) showed discrepancies in 37 (92.5%) publications, with 43.2% reporting fewer and 54.1% reporting more OAEs.

**Discussion:** This study highlights pervasive discrepancies in AE reporting for CBP trials, undermining the reliability of published safety data. Inconsistent reporting poses risks to clinical decision-making and patient safety. Adopting standardized reporting guidelines, such as CONSORT Harms, and ensuring transparent updates in publications could enhance the accuracy and trustworthiness of safety data. Journals and regulatory bodies should enforce compliance and future efforts should develop mechanisms to monitor and correct reporting inconsistencies, enhancing the trustworthiness of safety data in clinical research.

**Keywords:** Chronic back pain, adverse events, safety reporting, ClinicalTrials.gov, randomized controlled trials

Jillian Brassfield, BS, Caleb Uhunmwangho, BS, Taylor Gardner, BS, Alex Hagood, BSN, Brody Dennis, BS, Jacob Duncan, BA, Mahad Chaudhry, BS, Eli Paul, BS, Alicia Ito Ford, PhD, Matt Vassar, PhD

Jillian Brassfield, BS, Medical Student; jillian.brassfield@okstate.edu

### **An Examination of Data-Sharing Practices in Leading Obstetrics and Gynecology Journals**

**Background:** In medical research, data-sharing is crucial for advancing scientific understanding and innovation, particularly in obstetrics and gynecology (OB/GYN), where diverse reproductive health issues and maternal-fetal outcomes present unique challenges. Incorporating open data accessibility enhances research quality by allowing stakeholders to access study data, promoting transparency and collaboration. This study focuses on analyzing data-sharing statements in top OB/GYN journals to identify barriers to data availability in research, aiming ultimately to contribute to the enhancement of research quality.

**Methods:** A cross-sectional analysis, following PRISMA guidelines, was conducted to examine DSS in major OB/GYN journals. Journals were selected from the Journal Citation Reports™, and the top five were selected using the 2023 journal impact score. A comprehensive literature search was conducted in MEDLINE (PubMed) to locate studies within 2017-2023 to include for data extraction. Data extraction focused on data-sharing statement presence, study design, funding source, and publication year. Hierarchical logistic regression and thematic analysis were used to identify trends in data-sharing statements.

**Results:** Of the included clinical trials, over half did not contain a data-sharing statement (426/653, 65.24%). Our results indicated significant variability in data-sharing across journals and publishers. Theme assessment was then conducted on a total of 208 articles that had eligible data-sharing statements. Many data-sharing statements had a theme of conditional availability (154/208, 74.04%).

**Conclusion:** Our cross-sectional study reveals that DSS are often limited and vary by OB/GYN journal. While progress has been made in promoting data-sharing in OB/GYN research, significant challenges remain. Fully transparent and accessible research in OB/GYN will require effort, innovation, and collaboration across the scientific community.

**Keywords:** Data-sharing, OB/GYN, transparency, reproducibility, availability.

Claire Bridgewater, BS, **Dacie Sanders, BS**, Matthew O'Brien, PhD

Dacie Sanders, BS, Graduate Student; dacie.sanders@okstate.edu

**Patients' Perceptions of the Use of Artificial Intelligence in the Primary Healthcare Setting in the United States: A Critically Appraised Topic**

Clinical Scenario: Artificial Intelligence (AI) is a technological advancement that is able to replicate human intelligence such as critical thinking, problem solving, and decision making. As AI continues to advance, its integration into the healthcare systems could transform the industry, making care more efficient and accessible to patients worldwide.

Clinical Question: Patients in the healthcare setting, how does the use of artificial intelligence tools in diagnostics or treatment, compared to traditional healthcare practices, affect patients' perceptions of care quality and trust in healthcare providers?

Clinical Bottom Line: The current evidence suggests that participants believe AI in the healthcare system would improve medical outcomes.

Strength of Recommendation: According to the Strength-of-Recommendation Taxonomy (SORT) grades, each of the studies earns a Level of Evidence of C. Additionally, based on the Centre for Evidence-Based Medicine (CEBM) scale, these are classified as Level 4 due to the studies being low-quality cross-sectional surveys.

Keywords: patient perceptions in healthcare, artificial intelligence

Daxton Butler, BS, Hannah M. Congleton, BS, Ryan Cranna, BS, Bailey Morgan, BS, Justin Rein, BS, Gabrielle Smith, BS, Traber Smithson, BS, Lauren Streeter, BS, Naoma Tow, BS, Ipe Paramel, MHA, Marjorie Erdmann, PhD

Daxton Butler, BS, Medical Student; daxton.reed.butler@okstate.edu

### **LEAN Healthcare: Evaluation of the Scheduling and Prior Authorization Process in a Mid-Sized Hospital**

**Intro:** A patient's journey in diagnosis or healing frequently includes referral to a hospital system for images or ancillary services, wherein the authorization and scheduling process for those services can cause delays, threatening patient outcomes. Reducing these delays improves patient care and the hospital revenue. In this study, a team trained in LEAN healthcare quality improvement methodologies sought to analyze the referral and authorization processes of a midsized urban hospital to identify root causes of delays and propose solutions for C-suite's consideration.

**Methods:** A team of eight osteopathic medical students and one graduate student were trained in LEAN methodologies via lecture and simulation. The LEAN process improves care by standardizing operations and minimizing waste. A LEAN expert supervised the team. The team observed and interviewed staff in the targeted departments of physical therapy, interventional radiology, authorizations, and scheduling (DEPTS) and mapped their workflow, including EPIC electronic health record processes. Particular attention was paid to referrals taking longer than 72 hours. The team created maps reflecting the DEPTS' current state. Documentation was obtained for DEPTS work queues, and crossover workflows were mapped to reveal interdependence. Inefficiencies were mapped as "storm clouds" to signify problem areas. After analyzing inefficiencies, the team evaluated potential solutions based on solutions' degree of benefit versus effort, controllability versus non-controllability, and cost versus no cost to determine C-Suite recommendations.

**Results:** The investigation found improvements needed in work processing, EPIC information management/queues, and employee training and management. The analysis revealed multiple critical inefficiencies in scheduling and authorization workflows, including delays caused by non-standardized protocols, redundant work queues, and poor interdepartmental communication. Workflow mapping identified areas of waste and rework such as redundant excel files created and managed by employees trying to keep work better organized than the EPIC system provided. The team recommended standardizing protocols, sorting work queues by appointment date, and refining triage processes with visible authorization dates. Processes needed real-time synchronization of work queue updates and integration of management dashboard metrics into team workflows. Many of the recommended improvements included designing new processes within the EPIC system: consolidating or eliminating unnecessary work queues. Because an EPIC Boost Specialist was onsite during investigation, some recommendations were implemented immediately to streamline scheduling and prior authorization processes. Workforce training gaps surfaced, exemplified by the universal misunderstanding of the "Cancel Request" button's function in reducing bottlenecks. The team proposed staff training, development of reference manuals, where additional staff could be located, and interdepartmental communication.

**Conclusion:** Through a LEAN healthcare investigation including detailed electronic medical record system informatics mapping, systemic root causes of referral delays at a midsized urban hospital and promising resolution strategies were identified. Recommended solutions were aimed at redundant work in queues, non-standard procedures, and poor interdepartmental communication. The LEAN team implemented some immediate system changes, improving work queue communication during investigation, mapped ideal workflows to establish a standard protocol for post investigation use, and emphasized the importance of open departmental collaboration.

**Keywords:** LEAN, Scheduling, Authorization, Workflow Delays

Nicholas Camasso, MS, Ty Lutze, BS, Daniel Archer, BS, Logan Corwin, BS, Zohaib Thayani, BS, Andrew V. Tran, BS, Patrick Crotty, BS, Alec Young, BS, Alicia Ito Ford, PhD, Matt Vassar, PhD

Nicholas Camasso, MS, Medical Student; nick.camasso@okstate.edu

### **An Evaluation on Artificial Intelligence Guidelines in the Leading Clinical Pulmonology and Respiratory Medicine Journals: A Cross-Sectional Analysis**

**Background:** Artificial intelligence (AI) is advancing research in pulmonology and respiratory medicine, offering improvements in data analysis, systematic reviews, and clinical applications. Despite these benefits, its adoption also raises critical concerns around ethical use, transparency, and reproducibility. This study investigates how leading journals in the field of pulmonology and respiratory medicine respond to these challenges and opportunities through their author instructions and policies.

**Methods:** A cross-sectional analysis was carried out on the top 100 pulmonology and respiratory medicine journals, identified based on the 2023 SCImago SJR indicator. Each journal's "Instructions for Authors" was reviewed to identify AI-related policies, including AI-specific reporting guidelines, authorship criteria, and the use of AI tools for manuscript writing and image creation. Correlation analyses were used to explore associations between these AI policies and journal characteristics.

**Results:** Among the 100 journals reviewed, 66% addressed AI usage in their author guidelines, commonly prohibiting AI authorship while mandating disclosure of AI involvement in submissions. Only 26% permitted AI-generated content, and 17% allowed the use of AI-generated images. Two editorial organizations, dedicated to improving editorial standards, were mentioned within the journals' "Instructions for Authors" in regard to the use of AI in manuscript development: the Committee on Publication Ethics (COPE) and the World Association of Medical Editors (WAME). While 14% of journals recommended adherence to COPE guidelines, only 1% directed authors to WAME for regulations pertaining to AI use. Furthermore, only 5% addressed AI-specific reporting guidelines such as CONSORT-AI and SPIRIT-AI, with 60% of those journals only "recommending" adherence to said guidelines. Additionally, journals with higher impact factors were more likely to feature comprehensive AI policies. However, significant inconsistencies and a lack of standardized guidance were observed across journals.

**Conclusion:** Although many pulmonology and respiratory medicine journals acknowledge the growing role of artificial intelligence in research, few have endorsed AI-specific guidelines, leading to limited standardization and transparency in its use. To address this gap, we recommend the development and adoption of comprehensive policies to promote ethical, reproducible, and high-quality research in the age of AI-driven advancements.

**Keywords:** Artificial Intelligence, Reporting Guidelines, Pulmonology and Respiratory Medicine, Transparency, Authorship

Songjukta Chakraborty, MS, Natalie J Preveza, Ann Jeffers, Mason Hochstetler, BS, Anastasia Dodge, Timothy J. Jarome, Swarup Mitra, PhD

Songjukta Chakraborty, MS, Graduate Student; songjukta.chakraborty@okstate.edu

### **Heroin self-administration induces sex-specific SUMOylation at early abstinence**

**Introduction:** Opioid use disorder, particularly heroin use disorder (HUD), is a major medical challenge, marked by severe withdrawal symptoms and a high risk of relapse. Heroin abuse leads to severe withdrawal and high relapse rates, with neuroadaptations contributing to relapse. Sex-specific differences in heroin-induced neuroadaptations are poorly understood, limiting effective therapies. Post-translational modifications (PTMs), such as SUMOylation, play a key role in regulating protein function and neuroplasticity. SUMOylation attaches SUMO proteins to lysine residues, altering protein activity and influencing addiction mechanisms. Understanding sex-specific PTMs like SUMOylation could reveal new therapeutic targets for heroin addiction.

**Methods:** We employed a novel SUMO Capture Assay combined with liquid chromatography-mass spectrometry (LC-MS) to investigate SUMOylation in the nucleus accumbens (NAc) of rats subjected to heroin self-administration. Male and female rats underwent contingent heroin administration followed by a period of early abstinence. Global SUMOylation levels and specific SUMOylated proteins were analyzed to assess sex-specific differences in SUMOylation patterns.

**Results:** Our analysis revealed significant sex-specific alterations in protein SUMOylation during early abstinence, notably, males exhibited selective SUMOylation of specific protein targets, including TCP-1 $\eta$ , a critical chaperone involved in protein folding. These findings suggest that SUMOylation may underlie sex-specific neurobiological responses to heroin abstinence and contribute to the persistent neuroadaptations associated with HUD.

**Conclusion:** Preliminary studies show sex-specific changes in protein SUMOylation within the nucleus accumbens (NAc) during early abstinence from heroin self-administration. SUMO-Capture-LC/MS analysis revealed that SUMOylation occurs selectively in males on specific proteins, including TCP-1 $\eta$ , an important chaperone needed for protein folding. These findings suggest that SUMOylation may contribute to sex-specific neurobiological responses during heroin abstinence, highlighting potential targets for further investigation.

**Keywords:** SUMOylation, nucleus accumbens, addiction, TCP-1 $\eta$ .

Eva Chen, BS, **Amy Nguyen, BS**, Kellen Keefer, BS, Eddy Bagaruka, BS, Patrick Crotty, BS, Alec Young, BS, Andrew V. Tran, BS, Alicia Ito Ford, PhD, Matt Vassar, PhD

Eva Chen, BS, Medical Student; eva.c.chen@okstate.edu

### **Endorsement of Artificial Intelligence Guidelines Across Leading Endocrinology Journals: A Preliminary Cross-Sectional Analysis**

**Background:** Artificial intelligence (AI) is revolutionizing Endocrinology research by enhancing data analysis, systematic reviews, and clinical applications. However, its application raises concerns regarding transparency, ethical use, and reproducibility. This study evaluates how leading journals in the field of Endocrinology address these challenges and opportunities through their author instructions and policies.

**Methods:** A cross-sectional review of the top 100 peer-reviewed Endocrinology journals ranked by the 2023 SCImago SJR indicator was conducted. Data were extracted from each journal's "Instructions for Authors" to evaluate AI-related policies, including AI-specific reporting guidelines, authorship criteria, and the use of AI in manuscript preparation and image generation. Correlational analyses were performed to explore the relationship between AI policies and journal characteristics.

**Results:** Of the 100 journals evaluated, 76% addressed AI use in their instructions, with most prohibiting AI authorship while requiring disclosure of AI involvement in submissions. AI-generated content was allowed by 30% of the journals, while 65% approved AI-generated images. Journals with higher impact factors were more likely to include detailed AI policies, but significant gaps in standardization and guidance remain.

**Conclusion:** While many Endocrinology journals recognize AI's role in research, few endorse AI-specific RGs, limiting the standardization and transparency of AI use. We advocate for the adoption of comprehensive guidelines to promote ethical, reproducible, and high-quality research in the era of AI-driven innovation.

**Keywords:** Artificial Intelligence, Reporting Guidelines, Endocrinology, Transparency, Authorship

Carter Christman, BS, Creed Killgore, BS, Micah Hartwell, PhD

Carter Christman, BS, Medical Student; carter.christman@okstate.edu

### **A Systematic Review of Health Policy Interventions for Overweight/obesity in Adolescents and their Impact**

**Introduction:** Childhood obesity is a public health concern in the United States, affecting nearly one-third of adolescents. While many school-based programs have implemented nutritional and physical activity (PA) programs to address this, there have been varying degrees of success. Given the rates of childhood obesity and its impact on long-term health, examining programmatic outcomes from these health policy initiatives targeting childhood obesity is warranted.

**Methods:** We conducted a systematic review of Pubmed (MEDLINE), Embase, and the Cochrane database to examine nutrition and PA programs targeting childhood obesity and prevention. We included studies that stemmed from policy initiatives that were implemented in elementary and secondary (middle/high schools) in the United States. Article screening and data extraction were conducted in a masked, duplicative fashion to identify the article's intervention type, duration, and outcome measures.

**Results:** The searches produced 205 articles, from which 189 were excluded due to duplicates, not including PA or nutrition intervention, not having obesity outcome measures, or being older than the date range. Of the included articles, 11 (68.75%) were PA-related, 11 (68.75%) involved nutrition, and 6 (37.5%) contained both. Eight (50%) articles also included wellness education in their primary interventions. Outcome measures of all studies used BMI criteria for obesity. Notable secondary outcomes included nutrient intake (4/16, 25%). A study by Matsuzaki et al. in 2021 showed the most benefit—with a nutrition access intervention between the years 2002 and 2016 revealing evidence of favorable associations of the state and federal school nutrition policies with overweight/obesity prevalence trends.

**Conclusion:** Our systematic review showed that the majority of interventions published in the literature were either PA or nutrition based and related to State/Local policy guidelines. Between intervention types, more publications of nutrition interventions showed positive effects than PA studies. As the concerns for addressing pediatric obesity are critical, school-based programs targeting both PA and nutrition are necessary, but may not be sufficient alone. We encourage not only physician organizations to help lead policy changes at the national and state levels, but also with every pediatric patient and parent they treat.

**Keywords:** Policy, Obesity, Physical activity, Nutrition



Chandler Church, BS, Dacie Sander, BS, Matthew O'Brien, PhD

Chandler Church, BS, Graduate Student; chandler.church@okstate.edu

**The Effectiveness of Biceps Tenodesis Surgical Intervention in Treating SLAP Labral Tears in Active-Duty Military Members: A Critically Appraised Topic**

Clinical Scenario: Shoulder injuries are prevalent in military service members. Biceps tenodesis may provide an effective alternative to SLAP repairs regarding pain and function outcomes.

Clinical Question: In active-duty military members ages 18-45 with SLAP labral tears, does the biceps tenodesis surgical procedure reduce pain, improve patient-reported outcomes, and increase level of function?

Summary of Key Findings: A literature search was conducted on the effectiveness of biceps tenodesis surgical intervention on function and pain in the active-duty military population. Four studies discussing the use of biceps tenodesis as a treatment in military patients were included. All four of the studies demonstrated improved pain scores and increased function outcomes.

Bottom Line: The evidence suggest biceps tenodesis surgical intervention is an effective treatment method for SLAP tears in military personnel. Biceps tenodesis allows military patients an alternative surgical intervention compared to the traditional SLAP repair.

Strength of Recommendation: Based on the CEBM level of evidence and JBI Checklist for Qualitative Research all four studies should be included in this critically appraised topic.

Keywords: SLAP tear, biceps tenodesis, labral repair, military

Lindsey Crismas, BS, Molly Bloom, BS, Micah Hartwell, PhD

Lindsey Crismas, BS, Medical Student; lindsey.crismas@okstate.edu

### **The Association of Adolescent Obesity and Poor Mental Health: An Assessment of the Youth Risk Behavior Surveillance System**

**Introduction:** Adolescent obesity and mental health are two significant public health concerns. While studies suggest a relationship between the two, it remains unclear if this is due to elevated body mass index (BMI) or the psychosocial role of weight perception. Therefore, our study aims to assess the association between BMI and mental health, and the role of weight perception and demographic factors.

**Methods:** Using data from the 2021 Youth Risk Behavior Surveillance System, we determined population estimates, demographics, and rates of BMI, weight perception, and mental health groups. We constructed logistic regression models to assess associations between BMI and mental health, weight perception and mental health, and the effects of sex, age, and ethnicity/race.

**Results:** Adolescents with BMI's classified as overweight or obese had higher rates of poor mental health (34.4% and 32.89%, respectively). The odds ratios also found that they were 1.43 (95% CI: 1.24-1.66) and 1.53 (95% CI: 1.31-1.79) times more likely to experience poor mental health, compared to those with a healthy weight. Adolescents who perceived themselves as obese, regardless of actual BMI, were significantly more likely to experience poor mental health (BMI <95th percentile AOR: 1.95, 95% CI: 1.74-2.18 and BMI >95th percentile AOR: 1.82, 95% CI: 1.47-2.27) while those with obesity who perceived themselves as healthy weight were significantly less likely to experience poor mental health (AOR: 0.65, 95% CI: 0.45-0.93), compared to those who had healthy weight and their perception was congruent.

**Conclusions:** The association between BMI and poor mental health was significant, however, the association between weight perception and mental health was even stronger. Additionally, the additive effects of ethnicity/race, sex, and age highlight the need for personalized interventions in addressing adolescent mental health.

**Keywords:** Adolescent Obesity, Mental Health, Weight Perception

Patrick Crotty, BS, Junaid Alam, DO

Patrick Crotty, BS, Medical Student; patrick.crotty@okstate.edu

### **Incidental Diffuse Gastric Carcinoma Found in a Patient Presenting With Diabetic Ketoacidosis**

**Background:** Gastric cancer is the fifth most common and third most deadly cancer globally. It has three subtypes: intestinal, diffuse, and mixed, with intestinal being the most common. About 30% of gastric adenocarcinomas are diffuse (DGC). Although overall gastric cancer rates have declined due to *H. pylori* eradication and lifestyle changes, DGC incidence is rising. Risk factors include *H. pylori* infection, tobacco use, obesity, diet, and genetics. Around 1-3% of DGC cases are hereditary (HDGC), typically diagnosed before age 40, while non-hereditary DGC has a median diagnosis age of 70. DGC is most common in male Asians, Eastern Europeans, and South Americans. Over 40% of DGC patients present with metastatic disease, and the 5-year survival rate is 75% for localized disease, but only 7% for metastatic cases. DGC typically presents with abdominal pain, nausea, weight loss, and dysphagia. Histologically, it often features "signet ring" cells. The CDH1 mutation is most common, leading to reduced E-Cadherin expression, which promotes cancer spread.

**Case Presentation:** A 77-year-old male with Type 2 diabetes, peripheral artery disease, heart failure, hyperlipidemia, benign prostate hypertrophy, and hypothyroidism presented with abdominal pain, nausea, and vomiting for 2 weeks, along with decreased mental status and missed insulin doses.

Physical exam showed dry mucous membranes, tachycardia, mild abdominal tenderness, and lethargy. Lab results: WBC 22.2, Na 118, K 7.3, BUN 70, Cr 2.8, Glucose 738, AG 30, pH 7.09. Differential diagnoses included DKA, mesenteric ischemia, and others.

CTA was negative for ischemia, but an abdominal CT revealed liver lesions, lymphadenopathy, and a past cholecystectomy. The patient was diagnosed with DKA and treated with fluids and insulin in the ICU. He developed Afib RVR, treated with amiodarone. An MRI showed pleural effusion, ascites, liver lesions, and gastroesophageal thickening. EGD biopsy confirmed diffuse gastric adenocarcinoma. After stabilization, he was transferred to a large medical institution for further oncological treatment.

**Discussion:** Gastrectomy is the first-line treatment for localized diffuse gastric adenocarcinoma (DGC). As cancer increases in size, spreads to lymph nodes/adjacent organs, radiation and chemotherapy are often employed. Additionally, depending on the stage of cancer, palliative care is an option. Advanced age in conjunction with abdominal pain, nausea, and vomiting is a common presentation for gastric cancer. What made this case unique was the recent history of insulin noncompliance and the presence of diabetic ketoacidosis. Due to the considerable overlap in symptomatology between these two conditions, without appropriate imaging it is likely that his underlying malignancy would have been missed. Additionally, while diabetes and hyperglycemia are associated with worse outcomes in gastric cancer, DKA is not associated with diffuse gastric carcinoma.

**Keywords:** Gastric Cancer, Diabetic Ketoacidosis, Electrolyte Imbalance

Colin Davitt, BS, Jessalyn Rivet-Tissot, MS, Joe McCreary, MS, Victoria McCalister-Jones, BS, I-Hsiu Huang, PhD

Colin Davitt, BS, Medical Student; colin.davitt@okstate.edu

### **The effect of aging on antibody production against the receptor binding domain of *Clostridioides difficile* toxin B in a murine model**

*Clostridioides difficile* is a spore producing, gram positive, anaerobic bacillus which produces toxins and causes antibiotic associated diarrhea. The main risk factor for infection is disruption of the normal gut flora from antibiotic use, allowing overgrowth of *C. difficile* in the colon. Toxins can cause severe diarrhea and pseudomembranous colitis. Current therapies for acute infection are Fidaxomicin, Vancomycin, or Metronidazole. *C. difficile* infections (CDI) are an urgent problem, and developing effective vaccines should be a priority. The current aim of vaccine development has surrounded the receptor binding domain of the toxin B protein (rTcdB) because of its increased immunogenicity and non-toxicity. CDI are frequently acquired in hospitals and nursing homes, leaving the elderly population at a higher risk of developing CDI. Additionally, immunosenescence, decreased immune functioning in older individuals, only furthers their risk. Given that most murine vaccine studies use younger mice, and the increased risk of severe infection in the elderly, it is important that the efficacy of any vaccine be tested in this population. Our lab has studied the effect of aging on IgG production against rTcdB protein in a murine model. In our pilot study, we vaccinated young (6 weeks old) and elderly (72 weeks old) C57BL/6 mice with purified recombinant protein corresponding to the receptor binding domain of *C. difficile* toxin B (rTcdB). Each mouse received by intraperitoneal injection of 3 doses of 20µg rTcdB mixed with Alum or saline only. Our study showed that in both young and elderly mice, rTcdB vaccination induced antigen specific IgGs in serum collected 2 weeks post vaccination. Interestingly, our novel study showed a decreased IgG response in older mice when compared to the younger group, which could indicate a decreased defense against *C. difficile* infection in older mice. Our study suggests that the immune system of elderly individuals may not respond as robustly against rTcdB, which could reduce the efficacy of a vaccine based on this protein. More work can be done to investigate how to support gut microbiota and reduce severity of acute CDI in at risk populations. We are currently working on exploring the role of micronutrient supplementation to improve vaccine efficiency.

Keywords: clostridioides difficile, vaccine, elderly, mice

Anastasia Dodge, BS, Mason Hochstetler, BS, Ann Jeffers, MA, Songjukta Chakraborty, MA, Swarup Mitra, PhD

Anastasia Dodge, BS, Graduate Student; asmi239@okstate.edu

### **Mapping early life stress-induced sex-specific behavioral adaptations during adolescence**

**Introduction/ Objectives:** Adverse childhood experiences (ACEs) are deviations from standard conditions requiring significant psychological and neurobehavioral adaptations and can be modeled in rats through limited bedding and nesting (LBN) for postpartum dams. LBN disrupts maternal care, leading to behavioral adaptations in adult offspring. Additionally, adolescence is a critical period for social development; however, few studies exist examining this time point. In this study, we investigated the impact of LBN on social preference in adolescent rat males and females.

**Methods:** Female dams and their pups were exposed to either LBN conditions or normal bedding and nesting (naive) from postnatal day (PND) 2 to PND9. LBN conditions were normalized at PND10. Pups remained with their mothers until PND21, after which they were weaned and housed with same-sex littermates. At PND45, when rats reach adolescent age, social preference was assessed by measuring the amount of time an experimenter rat interacted with either a bystander rat or an inanimate object. **Results:** Our findings reveal that adolescent females exposed to LBN exhibited a significant preference for inanimate objects over social interaction with an unfamiliar bystander. In contrast, no significant differences were observed in social interactions with a familiar bystander, regardless of sex or stress condition.

**Conclusion:** These results highlight sex-specific effects of early-life stress on social behavior and suggest adolescent females show preferential susceptibility to a disruption in social preference.

**Keywords:** Early Life Stress, Rodent Model, Social Preference

Jake Duncan, BS, Josh Major, BS, Trevon Jelinek, BS, Arjun Malhotra, DO, Matt Vassar, PhD

Jake Duncan, BS, Medical Student; jakedun@okstate.edu

### **Intersection Syndrome Scoping Review**

**Background:** Intersection syndrome is an overuse injury involving the tendons of the first and second dorsal compartments of the wrist, frequently seen in individuals performing repetitive wrist movements. Despite its clinical significance, the condition remains underrecognized, often resulting in delayed diagnosis and treatment. This scoping review aims to systematically map the existing literature on intersection syndrome, focusing on its clinical presentation, diagnostic modalities, and treatment approaches.

**Methods:** Following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) guidelines, a comprehensive search of MEDLINE, Embase, Scopus, Web of Science, and the Cochrane Library was conducted. Studies examining clinical presentation, diagnostic methods, and treatment outcomes for intersection syndrome in human populations were included. Data were extracted and synthesized using a thematic framework, highlighting gaps in the current evidence base.

**Results:** The review identified key findings related to the variability of symptoms, the utility of diagnostic imaging modalities such as ultrasound and MRI, and the effectiveness of treatment options ranging from conservative management to surgical interventions. Recurrence rates and long-term outcomes were inconsistently reported, emphasizing the need for standardized approaches and robust comparative studies.

**Conclusion:** This review underscores the critical need for standardized diagnostic criteria and evidence-based management guidelines for intersection syndrome. Further high-quality research is required to address gaps in understanding and improve outcomes for patients with this underrecognized condition.

**Keywords:** intersection syndrome, wrist tendinopathy, scoping review, diagnostic modalities, treatment strategies

Ahmed Elghzali, BS, Daniel Molina, BS, Mahad Chaudhry, BS, Jacob Duncan, BA, Annes Elfar, BS, Eli Oldham, BS, Brody Dennis, BS, Eli Paul, BS, Alicia Ito Ford, PhD, Matt Vassar, PhD

Ahmed Elghzali, BS, Medical Student; ahmed.elghzali@okstate.edu

### **A Cross-sectional Analysis of Data Sharing Practices in High-Impact Rehabilitation Journals**

**Background:** Demand for rehabilitation services is rising. High-quality research is essential to address these challenges, with recent mandates emphasizing the importance of data sharing for transparency and reproducibility. Despite these mandates, significant gaps in data sharing persist, even with the increasing importance of data sharing statements (DSS).

**Methods:** A search was conducted on June 6th, 2024 using PubMed/MEDLINE to identify clinical studies from five of the top rehabilitation journals based on impact factor. We extracted DSS and general characteristics in a duplicated and masked fashion to identify influential factors on DSS inclusion using hierarchical logistic regression. Further we qualified these statements through thematic analysis. Lastly, email requests were sent to verify willingness to share data.

**Results:** Of 1,278 studies that underwent data extraction, 25.5% of studies in our sample featured a DSS; however, this figure was significantly influenced by one journal with a 99% inclusion rate, while the other four journals collectively had only a 5% rate. Further analysis of 314 DSS revealed the majority designated a gatekeeper role for handling data requests. After emailing authors to verify their commitment to the reported DSS, only 22.7% were willing to adhere to them.

**Conclusions:** Our study revealed notable discrepancies between journal policies and their impact on DSS. We recommend adopting the Transparency and Openness Promotion (TOP) to provide a framework for data sharing in the field of rehabilitation. Further standardization of DSS is needed, as alternative methods like data repositories have been shown to improve transparency and reproducibility.

**Keywords:** Rehabilitation, Data Sharing, Data Sharing Statements, Cross-Sectional Analysis

Macie Emery, Ishan Khurana, Alexis Jones, PhD

Macie Emery & Ishan Khurana, OKStars Students;  
mae41273@gmail.com, ishankhurana2007@gmail.com

### **The Emotional Response to Exercise**

It is commonly said that “Adding exercise to your daily routine can positively affect your life.” For example, exercise can reduce the risk of numerous health issues such as certain forms of cancer, high blood pressure, osteoporosis, diabetes, and obesity. However, in 2020, according to the Centers for Disease Control and Prevention, 24.2% of adults reached the guidelines for both muscle-strengthening activities and aerobic activities. If exercise is so important, why do over ¾ of adults not meet the physical activity guidelines? According to Harvard Medical School, exercise is easy to avoid. To help determine a way to get people to exercise, we conducted a study that used a program called FaceReader to analyze an individual’s facial expressions either while exercising or viewing exercise. By doing this, we can tell the emotion that they are feeling which can help medical professionals prescribe exercise specific to the individual’s taste which would result in more positive long-term results. Our objective of this study is to more accurately determine how exercise can be used as a prescription to ensure that patients stick to their treatment.

For the video portion of this study, participants watched a two-minute video with short clips of several exercises that increased in intensity as the video played, and, using Facereader, a program that examines the micro-expressions in someone’s face, we analyzed their facial expressions to see their varying emotions during the different exercises. For the exercise portion of this study, participants were given the option to choose from the treadmill, the exercise bike, or, if they had a device that could track their heart rate, the rowing machine. A camera was set up on the machine and FaceReader was used to analyze the emotional response to exercise. Exercise was conducted in two-minute intervals with 2 minutes of a warm-up, low-intensity, medium-intensity, high-intensity, and a cool down.

The data collected suggested that a majority of the participants had a less negative response to the moderate-intensity workouts. During the video portion of the study, we found that 42.86% of women’s peak interest of a certain intensity matched the intensity level of their preferred exercises, this was only true for 25% of men. From this we concluded that women’s facial expressions matched their preferred form of exercise 18% more than men’s. The workout portion of this study allowed us to analyze facial expressions while conducting exercises chosen by participants, according to the data collected we were able to better prescribe exercise regimens that are both physiologically and mentally beneficial for participants.

Keywords: Exercise, Emotional Response, FaceReader



Jania Flake, BS, Jun Lee, BS

Jania Flake, BS, Graduate Student; jaflake@okstate.edu

**The Effect of Public Insurance and Socioeconomic Status On Delay Of Care In Patients With Post-Operative Anterior Cruciate Ligament (ACL) Reconstruction**

Clinical Scenario: There are many disparities within healthcare, specifically in relation to socioeconomic status, leading to delay of care and treatment. Anterior cruciate ligament (ACL) ruptures are highly prevalent and can lead to secondary complications if treatment is delayed. Public health insurance can contribute to the delay of care in patients recovering from Anterior Cruciate Ligament Reconstruction (ACLR).

Clinical Question: How does public insurance and socioeconomic status (SES) affect the delay of care for patients with post-operative ACL reconstruction?

Clinical Bottom Line: There is moderate to strong evidence supporting the correlation between delay of care in ACLR and public insurance/lower socioeconomic status patients.

Strength of Recommendation: Based on the JBI for Qualitative Research, all studies are appropriate and should be used in this critically appraised topic

Keywords: delay of care, socioeconomic status, ACLR

Carrson French, BS, Ashleigh Buzzell, BS, Micah Hartwell, PhD

Carrson French, BS, Medical Student; james.c.french@okstate.edu

### **Association of COVID-19 Related Anosmia and the Structural Development of the Primary Olfactory Cortex and Hippocampus Among Pediatric Individuals**

**Introduction/Objectives:** COVID-19 pandemic had a profound impact on the social aspect of child development. However, few studies have examined its impact on the structural development of children's brains—particularly the olfactory bulb—given the reported anosmia often among those who acquired the virus. This study aims to assess potential structural differences in the olfactory system among children with reported past COVID-19 infections compared with children who did not report having COVID-19 using data from the Adolescent Brain and Cognitive Development (ABCD) Study.

**Methods:** We conducted a time-series analysis of magnetic resonance imaging (MRI) data from the Adolescent Brain and Cognitive Development (ABCD) study to determine if the volume of brain structures associated with the olfactory senses were impacted by COVID-19 infection. The ABCD study is a large-scale, longitudinal open-data neuroimaging study that consists of approximately 12,000 children born between 2006 and 2008 at 21 sites across the United States. We used regression analysis to compare the differences in brain volume growth in the structures of the primary and secondary olfactory cortices from scans taken in 2018-2019 to those from 2021-2022 among children in the COVID-19 substudy. Secondarily we compared brain structure development among those with COVID-19 by whether or not they experienced COVID-related anosmia.

**Results:** Of the 9,611 children in the sample, 694 reported having COVID-19. We found no significant differences in the brain structures under study. However, among participants with a prior COVID-19 infection, we did find significant differences in the volume of the hippocampus among those who had lost their sense of smell compared to those who had not ( $-52.68\text{mm}^3$ , SE: 26.73;  $t = -1.97$ ,  $P = .049$ ).

**Conclusions:** We found a significant association between children with COVID-related anosmia and smaller hippocampal volume, which may have long-lasting implications for odor discrimination, emotional and memory processing, and potential risks for specific medical conditions. Increased awareness of these complications could help healthcare providers initiate preventative care strategies to mitigate potential adverse outcomes.

**Keywords:** COVID-19, Anosmia, Olfactory System, Pediatric Brain Development, Hippocampal Volume

Luis Frias Perez, BS, Kaylyn Rowsey, BS, Brody Dennis, BS, Taylor Gardner, BS, Jacob Duncan, BA, Alex Hagood, BSN, Mahad Chaudhry, BS, Eli Paul, BS, Alicia Ito Ford, PhD, Matt Vassar, PhD

Luis Frias Perez, BS, Medical Student; luis.frias@okstate.edu

### **Evaluating Data-Sharing Practices in High Yield Pulmonology Journals**

**Objective:** To evaluate the current state of data sharing practices in pulmonology research, focusing on data sharing statements (DSS) and identifying barriers to accessing data.

**Background:** Chronic lower respiratory diseases affect over 34 million Americans and are significant causes of mortality and economic burden. Despite this, pulmonology research receives minimal funding. Data sharing is crucial for improving transparency, reproducibility, and minimizing research waste.

**Methods:** We searched Journal Citation Reports for top five pulmonology journals. Next, we selected original research articles using MEDLINE (PubMed) published between 2018 and 2023. In a masked duplicate manner, data was extracted on DSS presence, funding sources, study design, and publication year. Hierarchical logistic regression and thematic analysis were used to identify trends within DSS. Data was adjusted for nested data structures and sample sizes.

**Results:** Our final sample included 1077 articles, with 487 including DSS. Of these, 403 DSS were thematically analyzed. DSS inclusion rates increased from 2018 (19/200; 9.50%) to 2023 (87/134; 64.93%). The *Lancet Respiratory Medicine* had the highest DSS rate (215/257; 83.66%), while *Pulmonology* had the lowest (3/33; 9.09%). Clinical trials (416/772; 53.89%) were more likely to include DSS than cohort studies (65/282; 23.05%). Common DSS themes found were “conditional data availability” and “gatekeeper role.”

**Conclusion:** Data sharing practices in high-impact pulmonology journals are inconsistent, highlighting the need for standardized policies. Although DSS inclusion has improved, many studies still lack DSS, and the quality of DSS varies. Clearer mandates and enforcement are necessary to ensure effective data sharing and advancement in pulmonology research.

**Keywords:** Data-sharing, pulmonology, transparency

Joanna George, BS, Krista Schumacher, PhD, Eric Harp, DO, Tamar Finkel, MD

Joanna George, BS, Medical Student; joanna.george@okstate.edu

**Implementing Urine Microscopy at Oklahoma State University Health Services:  
A Medical Student-Led Quality Improvement Project**

**Introduction/Objectives:** Urine microscopy is a low-cost method for evaluating patients with urinary tract infections, metabolic disorders, and kidney disease. Despite clinician request, Oklahoma State University Health Services in Stillwater has not offered urine microscopy for over two years due to a lack of trained lab technicians. The goal of this quality improvement project was to improve one lab technician's confidence with preparing and reading urine microscopy slides and to refine the training process for future trainees.

**Methods:** Before training, one lab technician rated her perceived confidence levels on a scale of 0 (not at all confident) to 10 (very confident) with sample preparation, microscopy skills, and recognition of urine microscopy features such as cells, casts, and crystals. The trainer and trainee then prepared and reviewed four slides per available urine sample (eight total slides). After this training session, self-reported confidence ratings were measured again. Qualitative feedback regarding urine microscopy training was also collected from the lab technician.

**Results:** Self-reported confidence ratings improved from 5 to 10 for sample preparation, from 0 to 7 for microscopy skills, and from 0 to 5.5 for recognition of urine microscopy features. Feedback for future urine microscopy training included updating the standardized operating procedure, organizing urine microscopy training materials into sections that correlate with the laboratory's reporting system, and placing printed pictures of common urine microscopy findings near the microscope.

**Conclusions:** Initial urine microscopy training boosted confidence levels considerably. Future work includes implementing suggested changes for future trainees and pathologist review of prepared slides.

**Keywords:** quality improvement, urine microscopy, laboratory skills training

Adriana Michele Graybeal, MA, Jason Beaman, PhD

Adriana Michele Graybeal, MA, Graduate Student; agraybe@okstate.edu

### **A Study of Rater Uncertainty When Comparing Victim Typologies with Homicide Case Data**

**Introduction/Objectives:** Victimology is a new field at only 86 years old. Research in this field is sparse but necessary since victims are an important and vulnerable aspect in the field of Criminology. Victimology's focus is to try and understand the relationship between the victim and the offender. By understanding this relationship can help to understand the reason why crime occurs. In the criminal justice system, victims have been seen as disposable and categorized as such. The founders of this field (Benjamin Mendelsohn, Hans von Hentig, Stephan Schafer, Marvin Wolfgang, and Menachem Amir) all created classification systems that helped to categorize victims. Each one of these typologies looks at biological, social, and psychological factors that play a role in how much or how little involvement or blame may be placed on the victim.

**Methods:** After looking into the history of this field, research on victims has been focused on cases of rape which is why the data for this study utilized homicide cases. Data surrounding 564 closed homicide cases were comprised and presented to subjects so they could be rated based on the typology instructions presented. Utilizing a pairwise inter-rater reliability and Friedman's test, several significant relationships were found to exist between victim typologies.

**Results:** The results of this study are still being worked out because there have been some minor changes to the test that we have run. The findings to this point are as follows Mendelsohn victim typology Gwet's AC1 coefficient 0.192 meaning slight agreement, Hans, von Hentigs victim typology AC1 coefficient of 0.134 meaning slight agreement, Stephan Schafer victim typology AC1 coefficient of 0.107 meaning slight agreement, Marvin Wolfgang's victim typology AC1 coefficient of 0.028 meaning fair agreement, and finally Menachem Amirs AC1 coefficient of 0.415 meaning a moderate amount of agreement. Comparing all five of the typologies is the portion of the experiment that is still on going.

**Conclusions:** The preliminary results show that three out of the five victim typologies have slight agreement between raters suggesting that this agreement may be due to chance and not due to actual agreement between the raters. The other two typologies that are being looked at have a moderate level of agreement meaning that these two typologies may be a good way to classify victims of homicide. However, even with these results it is important that the typologies are tested to make sure that there were no issues with the protocol, and trainings that the raters received. This research needs to have more work done with it to determine if these typologies can be utilized with all types of crime and to see if there should be changes made to the typologies to better answer the question why crime occurs and to help us better define the victim and criminal relationship.

**Keywords:** Inter-rater Reliability, Victimology, Victim Typologies, Gwet's AC1

Elizabeth H. Hall, BS, Hira Noon, BA, Christian Hemmerich, BS, Haley Howard, BS, J. Tyler Babek, BS, Garrett Jones, BS, Allison Goldenstein, DO, MPH, Alicia Ito Ford, PhD, Matt Vassar, PhD

Elizabeth H. Hall, BS, Medical Student; hartley.hall@okstate.edu

### **Evaluating Participant Diversity Gaps in Atopic Dermatitis Clinical Trials: A Systematic Review and Meta-Analysis**

**Introduction/Objectives:** Atopic dermatitis (AD) is a common inflammatory skin condition affecting diverse demographic groups. Clinical trials are crucial for evaluating interventions, but insufficient diversity in age, race, and ethnicity among participants can limit the generalizability of findings. This study aimed to examine the diversity of participants in AD clinical trials based on age, race, ethnicity, and sex.

**Methods:** We conducted a systematic review and meta-analysis following PRISMA 2020 guidelines. Using the Clinical Trial Diversity Rating (CDR) framework, we evaluated age, race, ethnicity, and sex inclusion in studies published between January 2013 and December 2023.

**Results:** Our analysis of 17 studies revealed a significant underrepresentation of Asian, Black, and Hispanic/Latinx participants in AD clinical trials, with several studies showing statistically significant disparities. Conversely, white participants were predominantly overrepresented, although this finding was not statistically significant. We also observed disparities in sex representation, with females underrepresented in half of the studies and males overrepresented in the majority. Additionally, our analysis highlighted inconsistent reporting of age, as many studies failed to disclose the intended age range for treatment or the inclusion of participants over the age of 65.

**Conclusions:** Clinical trials for atopic dermatitis in the United States demonstrated inconsistent reporting of race, ethnicity, and age. Our analysis revealed varying levels of participant inclusion among different demographics, with non-white participants being notably underrepresented in the majority of clinical trials.

**Keywords:** Atopic Dermatitis, Health Equity, Underrepresented Populations, Health Disparities

Lauren Hall, MScR, Anne Weil, PhD, Eric Snively, PhD

Lauren Hall, MScR, Graduate Student; lauren.hall12@okstate.edu

### **Statistical Effects on FEA-simulated Stress and Strain in Feeding Rodents When Teeth are Modeled and Implanted as Separate Structures**

**Background:** Finite element analysis (FEA) is used in paleontology to visualize the stress and strain distributions in extinct animals during biting and to make ecological inferences. Most previous work models teeth as physically and materially continuous with the cranium and mandible. When teeth are modeled separately the focus is usually on individual teeth or the mandible. We test the impacts of modeling the teeth as separate structures on the cranium, mandible, and teeth, with the first statistical comparison for mammals of stress and strain results in separate-tooth versus simplified continuous models.

**Methods:** We used CT scans of *Rattus norvegicus* (ID: 55306) and *Cavia porcellus* (ID: 55304) from Morphosource. We produced three models: (1) a continuous bone-material model of the cranium and mandible with the teeth fused, and models with teeth as separate objects with; (2) enamel or; (3) dentine properties applied. We imported models into Strand7 for FEA. Forces from published literature were applied for the muscles of mastication: the superficial masseter, anterior and posterior deep masseter, temporalis, anterior, posterior, and infraorbital zygomaticomandibularis, and the internal and external pterygoid muscles. We applied elastic moduli of 17 GPa for bone, 16.9 GPa for dentine, and 83 GPa for enamel. By constraining respective teeth, we simulated a bilateral incisor bite to simulate gnawing, and the start of a unilateral left sided chewing motion. Simulated direct attachments connected the teeth to the cranium and mandible.

**Results:** von Mises overall stress, and von Mises, tensile and compressive (first and third principal) strains, were sampled from twenty-two consistent mandible and tooth locations, and compared stress and strain between models using Kruskal-Wallis and Tukey-Kramer tests. Modeling the teeth as separate has a varying effect on the resulting stress in the two taxa. The rat showed more differences between the three models. The guinea pig model showed no significant difference in stress when modeling teeth as separate structures. The dentine separate teeth analysis resulted in both the guinea pig bites having overall higher strain compared to the bone and enamel models. The rat molar bite with teeth modeled as enamel showed high von Mises and tensile strain anterior to the left maxillary incisor, and the dorsal surface of the left mandibular ramus. With incisor bites, the highest strain occurred with teeth as dentine and lowest strain on the all-bone model.

**Conclusions:** This is the first study in rodents that examines the statistical differences in FEA results when teeth are modeled as separate structures. We demonstrate that such modeling promises a more realistic distribution of stress and strain during both molar and incisor biting. Detaching the teeth from the jaw reveals where stress and strain transfer from the teeth to the skull. The difference in modeling teeth as enamel or dentine is expected, as enamel has lower strain values with its greater stiffness. The difference in results between the rat and guinea pig are potentially related to differences in diet, chewing motion, or phylogeny. This will be resolved in future research by including more rodents.

**Keywords:** Teeth, Material Strain, Feeding

Kylie Handa, BS, **Alex Murry, BS**, Micah Hartwell, PhD

Kylie Handa, BS, Medical Student; kylie.handa@okstate.edu

### **Impact of medical home status on asthma severity and relationship between medical home status and sociodemographic factors among children with asthma**

**Context:** Access to medical homes—defined as having a primary doctor or nurse who provides comprehensive and family-centered care—is critical for children with chronic illnesses. As asthma affects nearly 5 million children in the US and symptom management can be complicated, continuous access to medical care is often necessary. Uncontrolled asthma puts children at increased risk for developing longer-lasting health problems and reduces the quality of life secondary to recurrent exacerbations.

**Objective:** Our objectives were to examine the prevalence of medical home access among children with asthma and the association between medical home status and asthma severity, among other sociodemographic factors.

**Methods:** We conducted a cross-sectional study using data from the 2022 cycles of the National Survey of Children’s Health to assess how many children with asthma are classified as being in a medical home. We then assessed associations between medical home status and asthma severity, age, and family structure, using design-based  $X^2$  tests.

**Results:** Among a sample of 3,636 children reported to have asthma, 41.5% were in a medical home. We found significant associations between medical home status and each of the variables’ tests ( $P < .001$ ) except age. First, among those with severe asthma, only 19.0% were in a medical home while 45.1% with mild symptoms were. As parent education increased, so did the percentage of children who met the criteria for being in a medical home. Regarding family structure, the highest rates of medical home access were among two biological parents.

**Conclusion:** Our results showed that 41% of children with asthma were in medical homes—and only 1 in 5 with severe symptoms. Additionally, there are sociodemographic factors that significantly impact the likelihood of children with asthma having access to a medical home. Given the scale of children with asthma not having comprehensive medical care, national and state policies are needed to enhance access to services.

**Keywords:** Asthma, medical home, sociodemographic factors, access



Tag Harris, BS, Kiera Fleck, BS, Jeffrey L. Dupree, PhD, Candice Contet, PhD

Tag Harris, BS, Medical Student; tagharr@okstate.edu

### **Myelin Pathology in White Matter Tracts Following Chronic Intermittent Ethanol Exposure in Mice**

**Background:** In the vertebrate brain, myelin sheaths accelerate action potential propagation. Chronic alcohol exposure disrupts myelin gene/protein expression and reduces white matter integrity in humans. This study investigated the effects of chronic intermittent ethanol (CIE) exposure on myelin ultrastructure in three mouse brain white matter tracts.

**Methods:** Electron microscopy was used to assess myelin sheath ultrastructure in the corpus callosum (cc), stria medullaris (sm), and anterior commissure (ac) of two C57BL/6J male mice exposed to six non-consecutive weeks of CIE vapor inhalation (n=1) or air only (n=1). Each CIE week involved four cycles of 16-hour intoxication followed by 8-hour withdrawal and a final 72-hour withdrawal. Each 16-h period of ethanol vapor exposure was primed with an i.p. injection of ethanol (1.5 g/kg) to initiate intoxication and pyrazole (1 mmol/kg) to normalize ethanol clearance rate between individual mice. The air-exposed control mouse received pyrazole only. During vapor exposure, the CIE mouse had an average blood alcohol level of  $199.0 \pm 15.1$  mg/dL. Mice were perfused five days after the final withdrawal and immersed in fixative for 3 weeks. Brain punches containing the cc, ac, and sm were processed for electron microscopy imaging at 5300x magnification, and axons  $>0.3 \mu\text{m}$  in diameter were analyzed for myelination status and pathologies using Fiji software.

**Results:** CIE exposure induced significant myelin pathology across all examined white matter tracts including splitting myelin, uncompacted myelin, degenerating axons, and electron-dense bodies. Degenerating axons were the most frequent pathology in the cc of the CIE mouse, with a mean relative frequency of  $1.00 \pm 0.00$  compared to  $0.21 \pm 0.01$  in the air-exposed mouse. Splitting myelin was elevated in the ac and sm of the CIE mouse, with relative frequencies of  $1.00 \pm 0.00$  vs.  $0.23 \pm 0.02$  (ac) and  $0.21 \pm 0.01$  (sm) in the air-exposed mouse. Electron-dense bodies were observed in both groups but were more frequent in the CIE mouse.

**Conclusions:** These findings demonstrate that CIE exposure disrupts myelin ultrastructure, with degenerating axons as the most frequent pathology. This effect may stem from intoxication, withdrawal, or both. Despite the small sample size, this study highlights the tract-specific impact of ethanol exposure on white matter integrity. Further research should explore whether these findings are consistent across larger cohorts, sexes, and additional brain regions to clarify the mechanisms underlying ethanol-induced myelin damage.

**Keywords:** Neurodegeneration, Alcohol Use Disorder (AUD), Electron microscopy imaging

Tag Harris, BS, **Bryce Sanchez, BS**, Alex Hagood, BSN, Annes Elfar, BS, Jacob Duncan, BA, Taylor Gardner, BS, Eli Paul, BS, Chase Ladd, DO, Alicia Ito Ford, PhD, Matt Vassar, PhD

Tag Harris, BS, Medical Student; tagharr@okstate.edu

### **Data Sharing in Anesthesia Research: The Price Tag of Transparency and Compliance**

**Introduction:** This study evaluated data sharing statements (DSS) in manuscripts from the top five anesthesia journals between 2020 and 2023. DSS are crucial for research transparency. Given the growth in anesthesia and its research, it is important to assess how leading journals are adopting these practices. This analysis investigates DSS presence and quality in leading anesthesia journals publishing primary patient data.

**Methods:** We identified the top five anesthesia journals using Clarivate's Journal Citation Reports™ and searched MEDLINE (PubMed) for relevant studies from 2020 to 2023. Authors screened articles and extracted data using a standardized form. We focused on DSS presence, themes, and authors' responsiveness to data sharing requests.

**Results:** DSS prevalence varied: Anaesthesia, Critical Care & Pain Medicine increased from 15.4% in 2020 to 30% in 2023, while Anesthesia and Analgesia remained under 8%. Government-funded research was positively associated with DSS inclusion (estimate: 0.734,  $p = 0.047$ ), whereas higher impact factor journals showed a negative association (estimate: -0.298,  $p = 0.008$ ). The most common DSS theme was Conditional Data Availability (74.5%). Only 27.4% of authors responded to data sharing requests, and 13.7% agreed to share data for replication.

**Conclusion:** The study reveals significant deficiencies in data sharing practices in leading anesthesia journals. Implementing robust data sharing policies could improve transparency and reproducibility, advancing open science in this field.

**Keywords:** Anesthesia, Data sharing, leading journals

Rachel Hazlitt, BS, Seth Sims, BS, Eli Paul, BS, Alex Hagood, BSN, Mahad Chaudhry, BS, Annes Elfar, BS, Jacob Duncan, BA, Zachary Upchurch, MD, Alicia Ito Ford, PhD, Matt Vassar, PhD

Rachel Hazlitt, BS, Medical Student; rachel.hazlitt@okstate.edu

### **Data Sharing Trends in Core Otolaryngology Journals: A Cross-Sectional Analysis**

**Background:** Data sharing aids in transparency, replicability, and lowers research waste, yet data sharing in otolaryngology is inadequate despite its major impact on patient health and healthcare costs. This study aimed to evaluate the use of data sharing statements in core otolaryngology journals to assess if this impacted data availability.

**Methods:** We performed a search of the public database MEDLINE to identify articles from eight core otolaryngology journals. Screening and data extraction were performed in a masked, duplicate fashion to limit error. General study characteristics and the presence and content of data sharing statements were recorded.

**Results:** 1180 articles were included. Of the included studies, 201(201/1180, 17.03%) contained a data sharing statement. Of these, 174 (174/201, 86.57%) had data made available and were eligible for theme assessment. Hierarchical logistic regression was used to evaluate trends and factors influencing data sharing practices.

**Conclusion:** The variability in data sharing among core otolaryngology journals impacts research transparency and clinical outcomes. Journal-specific policies and response rates reveal gaps in data sharing statements, emphasizing the need for clearer guidelines and improved data accessibility to enhance evidence-based practice.

**Keywords:** Dissemination, information, otorhinolaryngology, otology, laryngology

Rachel Hazlitt, MS, Marjorie A. Erdmann, PhD

Rachel Hazlitt, MS, Medical Student; rachel.hazlitt@okstate.edu

### **An Electronic Medical Record Study of the Rate of CT and MRI scanning in Female Victims of Nonfatal Strangulation Assault**

**Background:** In the US, 1 in 6 adult women will experience non-fatal strangulation (NFS) such as choking or suffocation in their lifetimes. NFS is a severe form of intimate partner violence (IPV), characterized by external pressure on the neck that can lead to hypoxic injuries which can be classified as a type of injury to the brain including traumatic brain injury (TBI). Brain injuries are best identified through CT and MRI scanning, MRI being far superior. To date the appropriate, standardized care for NFS victims allows for clinician's judgement as to the medical necessity of CT or MRI scans to identify brain injury. It is unknown the extent to which clinicians seek those scans after an assault diagnosis in women.

**Objective:** This study aims to assess the rate of documented CT and MRI imaging procedures (representing a clinician decision to assess for brain injury beyond physical assessment) among female patients with a documented diagnosis of strangulation from assault.

**Methods:** The data was extracted from Cerner Health Facts, one of the largest HIPAA-compliant relational databases. To extract female patients most likely to have suffered from domestic assault, we used the ICD9 code 994.7 and ICD9 code E963 to clearly identify those patients suffering from assault strangulation. We limited age to 13 years and older. Patients with unknown age were excluded.

**Results:** The data query (from the Cerner Realdataset) identified 160 female patients aged 13 to 65 (M = 32, Std dev = 13.61) . Twelve women (7.5%) received a CT of head (combined CPT codes 87.03 and 70450) and none were coded as receiving an MRI of the head. Frequency of treatment location was as follows: 95 (59%) in the emergency room, 45 (28%) in inpatient care, 7 (4%) in observation unit, and 6 (4%) in an outpatient clinic.

**Conclusion:** The sample size of the study was extremely low given the 85+ million unique patients in the dataset; our conclusion was that physicians do not code for NSF assault, making studying treatment of assault victims difficult. Therefore, next steps in understanding treatment of NFS victims will include treatment of NFS broadly.

Using the frequency of CT and MRI scans as a proxy for clinical interest in understanding and identifying injury to the brain after strangulation, it appears that brain injury detection through imaging is not yet a routine focus, suggesting that the standard of care for NFS patients' needs further establishment. Since there is no standardized care requiring scanning (even though brain injury can occur without external strangulation signs), we cannot conclude inappropriate treatment was delivered. Changes to appropriate care standards may be necessary.

Given the extremely low rate of CT or MRI imaging at the initial time of treatment, we wonder what educational discharge material patients are provided to raise their awareness of their risk of brain injury. To explore patient education, these researchers are currently conducting an OSU CHS IRB approved study of Oklahoma hospital systems' embedded patient education provided post asphyxiation and strangulation.

**Keywords:** Strangulation, Traumatic Brain Injury, Intimate Partner Violence, Females

Dilani Herath, PhD, Nedra Wilson, PhD

Dilani Herath, PhD, Staff; dilani.gunasena@okstate.edu

### **A quantitative proteomic and phenotypic analysis of *Chlamydomonas* wild-type and *lf4* mutant**

Background: Normal health and development require cilia and flagella, which are essential organelles that are highly conserved across different species. The molecular mechanisms that regulate their assembly state, however, remain largely unknown. In *Chlamydomonas*, mutations in any of five long flagella (*lf*) genes result in cells that assemble flagella more than twice the length of wild-type cells. To learn more about the role of one of these genes, LF4 (which encodes a MAP kinase) we used a phenotypic analysis along with a global proteomic approach to identify differentially expressed proteins in the flagella and cell bodies of *lf4* and wild-type cells.

Methods: To determine the cell body volumes, cells were fixed with an equal volume of 1% glutaraldehyde and examined by phase contrast microscopy. Cell volume was determined with the following equation  $(4/3\pi[(\text{length}/2)]^2[(\text{width}/2)]^2)$ . Quantitative LC-MS/MS was performed on equal amounts of protein from purified cell bodies and flagella. Resulting data was analyzed using MaxQuant (Version 1.5.2.8) and Perseus (version 1.5.5.3). In order to examine the effect of rapamycin on cell growth, cells were cultured on agar plates containing rapamycin and exposed to constant light.

Results: As determined by microscopic analysis, there was a significant increase in the size of *lf4* cell bodies compared to wild-type cells. As shown by analysis of the quantitative LC-MS/MS spectra, 66% of the total proteins were common between the two strains with 11% and 12% of flagella proteins and cell body proteins respectively being differentially expressed. Enrichment analysis revealed a decrease in proteins involved in protein synthesis but an increased expression of proteins involved in energy production in *lf4* cell bodies compared to wild type. Differential expression of flagellar proteins was also seen in these two strains. For example, *lf4* flagella had an increased expression of microtubule motor proteins while wild type had increased expression of proteins associated with organelles. Cells grown in the presence of rapamycin exhibited a dose-dependent decrease in viability and cell growth on both strains, although the effect was less pronounced in *lf4*.

Conclusions: The observation that *lf4* cell bodies are larger than wild-type cells suggest that regulation of both flagellar length and cell body size are impaired. The LF4 gene product could regulate both flagella and cell body size. The increase in flagella and cell body size are surprising given the decreased expression of proteins involved in transcription and translation. The increase in protein levels for proteins involved in energy production could reflect an increased energy requirement necessary for flagellar motility with the *lf4* flagella.

Keywords: Cilia, Flagella, *Chlamydomonas*, Proteomics

Garrett Herring BA, **Diya Mathew, BS**, Noah Barks, BS, Luis Frias Perez, BS, Trevon Jelinek, BS, Patrick Crotty, BS, Andrew V. Tran, BS, Alec Young, BS, Alicia Ito Ford, PhD, Matt Vassar, PhD

Garrett Herring, BA, Medical Student; garrett.herring@okstate.edu

### **Endorsement of Artificial Intelligence Guidelines Across Leading Rehabilitation Journals: A Series of Cross-Sectional Reviews**

**Background:** The use of Artificial intelligence (AI) is reshaping Physical Medicine and Rehabilitation research by enabling advancements in data analysis, systematic reviews, and clinical applications. However, its adoption brings forth issues regarding ethical use, transparency, and reproducibility. This study investigates how top journals in Physical Medicine and Rehabilitation address these challenges and opportunities through their author instructions and policies.

**Methods:** A cross-sectional review was conducted on the leading 100 peer-reviewed Journals in Physical Medicine and Rehabilitation, as ranked by the 2023 SCImago SJR indicator. Data were extracted from each journal's "Instructions for Authors" to assess AI-related policies, including AI-specific reporting guidelines, authorship criteria, and the use of AI in manuscript preparation and image generation. Correlational analyses were conducted to explore the relationship between AI policies and journal characteristics.

**Results:** Of the 100 journals reviewed, 86% addressed the use of AI in their instructions, with the majority prohibiting AI authorship and requiring disclosure of AI involvement in submissions. However, AI-generated content was permitted by 61% of journals, while 39 % approved the use of AI-generated images. Journals with higher impact factors were more likely to include detailed AI policies, though notable gaps in guidance and standardization remain.

**Conclusion:** Although many Physical Medicine and Rehabilitation journals acknowledge the role of AI in research, only a few have adopted AI-specific reporting guidelines, limiting standardization and transparency of AI usage. We recommend implementing comprehensive guidelines to promote ethical, reproducible, and high-quality research in the era of AI-driven innovation.

**Keywords:** Artificial Intelligence, Reporting Guidelines, Physical Medicine and Rehabilitation, Transparency, Authorship

Mason, Hochstetler, BA, Anastasia Dodge, BS, Ann Jeffers, MS, Songjukta Chakraborty, MPharm, Swarup Mitra, PhD

Mason Hochstetler, BA, Graduate Student; mason.hochstetler@okstatate.edu

### **Xylazine adulteration modulates heroin-induced behavioral responses**

**Introduction:** The United States is currently facing a severe crisis involving opioids and opioid use disorder (OUD), which is characterized by compulsive use despite its harmful effects. The American Society of Addiction Medicine defines addiction as “a treatable, chronic medical disease involving complex interactions among brain circuits, genetics, the environment, and an individual’s life experiences.” In 2022, opioids were involved in 81.8% of 51,435 fatal overdose deaths in the U.S., and there were 96,332 reported non-fatal opioid overdose emergency visits based on CDC data. However, these figures, collected from only 30 states for fatal cases and 21 states for non-fatal cases, likely underestimate the true scale of the crisis. Compounding the epidemic is the growing concern over drug adulteration, particularly with xylazine, a veterinary anesthetic with no approved use in humans. Xylazine has been linked to severe side effects, including injection site lesions, respiratory depression, and other harmful physical effects. However, the impact of Xylazine adulteration on behavioral modalities is not clearly understood. Currently, there are no studies performed to examine how xylazine adulteration influences heroin-induced behavioral outcomes.

**Methods:** Adult Sprague-Dawley rats were tested in a self-administration paradigm to investigate the impact of xylazine adulteration preclinically. Subjects were divided into four groups: saline, heroin, xylazine, and a heroin-xylazine cocktail. Following jugular vein catheter implantation, rats self-administered their assigned drugs for two hours daily over ten days. On the 11<sup>th</sup> day, a progressive ratio test measured motivation, followed by an extinction protocol (abstinence days 5-14) and a cue-induced reinstatement experiment on abstinence day 15.

**Results:** Rats in the heroin group exhibited significantly higher self-administration levels compared to the heroin-xylazine group despite showing similar motivation in the progressive ratio test. Cue-induced reinstatement revealed no differences in the extinction of drug-paired cues between the heroin and heroin-xylazine groups.

**Conclusions:** This suggests that xylazine adulteration may decrease active heroin-taking behavior while preserving opioid motivation comparable to heroin alone. It appears following cue-induced reinstatement that xylazine adulteration neither slows nor accelerates cue extinction. These compelling findings warrant further investigation into the neurobiological changes induced by xylazine in heroin-exposed animals that drive these behavioral outcomes.

**Keywords:** Heroin, Xylazine, Motivational behavior

Marissa Holloway, BS, P. Tristen, BS, J. Volberding, PhD

Marissa Holloway, BS, Graduate Student; marissa.holloway@okstate.edu

### **Neck Strengthening Reduces the Risk of Concussion: A Critical Appraisal Topic**

Clinical Scenario: A concussion is a traumatic brain injury (TBI) that is caused by a direct or indirect blow. Symptom duration and severity vary depending on the individual and trauma. There are multiple predisposing factors that can increase the risk of concussion such as collision sports, sport position, history of concussions, age, being female, and neck strength. Neck strength is a risk factor that can be assessed and modified to reduce the risk of concussions.

Clinical Question: Does neck strengthening reduce the risk of concussions in collision sports?

Summary of Key Findings: Based on the studies' findings, neck strengthening may mitigate the risks of concussions in collision sports. Among the individuals that sustained a concussion, weak extension strength was the weakest. A handheld dynamometer is a reliable tool to measure neck strength.

Clinical Bottom Line: Implementing neck strengthening may reduce the risk of concussions in collision sports. The outcome measures showed that after increasing neck strength the incidence of concussions decreased. In the subjects that sustained a concussion, overall neck strength was weaker, especially in extension.

Strength of Recommendation: Based on CEBM and PEDro scores of evidence assessments, the strength of recommendation is a B.

Keywords: head injury, risk reduction, collision sports



Malek Itani, BS, Caden Forbes, BS, Logan Cowrwin, BS, Daniel Archer, BS, Laura Tham, BS, Patrick Crotty, BS, Alec Young, BS, Andrew V. Tran, BS, Alicia Ito Ford, PhD, Matt Vassar, PhD

Malek Itani, BS, Medical Student; mitani@okstate.edu

### **A Cross Sectional Analysis of Artificial Intelligence Guidelines in Journals of Pediatrics, Perinatology and Child Health**

**Background:** Artificial intelligence (AI) is revolutionizing Pediatric research by advancing data analysis, systematic reviews, and clinical practices. Despite its potential, integration of this technology raises concerns about transparency, ethical application, and reproducibility remain significant. This study aims to examine how prominent Pediatric journals navigate these opportunities and challenges through their author guidelines and policies.

**Methods:** A cross-sectional analysis was performed on the top 100 peer-reviewed Pediatric journals, ranked by the 2023 SCImago SJR indicator. Information was collected from each journal's "Instructions for Authors" to assess AI-related policies, including guidelines for AI-specific reporting, authorship criteria, and the use of AI in manuscript preparation and image creation. Correlational analyses were used to examine the association between AI policies and journal characteristics.

**Results:** Out of the 100 journals analyzed, 87% referenced AI use in their author instructions, with most disallowing AI authorship but requiring authors to disclose AI involvement in submissions. AI-generated content was permitted by 22% of journals, and 37% allowed AI-generated images. Journals with higher impact factors were more likely to feature comprehensive AI policies, yet significant inconsistencies and a lack of standardized guidance remain.

**Conclusion:** Although many Pediatric journals acknowledge the impact of AI in research, few promote AI-specific reporting guidelines, hindering standardization and transparency. We advocate for the implementation of robust guidelines to uphold ethical practices, reproducibility, and high-quality research in this era of AI-driven advancements.

**Keywords:** Artificial Intelligence, Reporting Guidelines, Pediatrics, Transparency, Authorship

Darian Jackson, BS, **Bethany Donaldson, BS**, Dusti Sloan, PhD

Darian Jackson, BS, Medical Student; [darian.j.jackson@okstate.edu](mailto:darian.j.jackson@okstate.edu)

### **Bone Protection in Estrogen-Treated Rats Versus Oil-Treated Rats: An Exploratory Microarray Analysis**

**Introduction/Objectives:** As aging and menopause occur, a decrease in estrogen leads to a variety of physiologic changes. Bone maintenance is one of the major factors effected by decreased estrogen. Using an exploratory microarray analysis, we examined the arcuate nucleus (ARC) of the hypothalamus in estrogen-treated and oil-treated rats to identify differences in estrogen-related gene expression.

**Methods:** Six Sprague-Dawley rats underwent bilateral ovariectomies and were allowed a seven-day recovery period, after which three rats received oil injections, and three rats received estrogen injections. Biopsies were obtained from the ARC of the hypothalamus of each of the six rats and isolated ribonucleic acid (RNA) was sent to the Thermo Fischer Scientific-Microarray Research Service Lab for examination. Finally, we interpreted the results of the microarray analysis using the Transcriptome Analysis Console (TAC 4.0) software.

**Results:** Estrogen-treated rats displayed higher levels of parathyroid hormone-related protein (PTHrP) and S100 calcium-binding protein G compared to oil-treated rats.

**Conclusions:** Based on our exploratory microarray analysis, we determined that the ARC of the hypothalamus of estrogen-treated rats showed increased expression of PTHrP and S100 calcium-binding protein G, hormones related to bone health and bone maintenance.

**Keywords:** arcuate nucleus, estrogen-treated, oil-treated

Jace Jackson, BS, Carrson French, BS, Zach Monahan, BS, Kelly Murray, PharmD, Micah Hartwell, PhD

Jace Jackson, BS, Medical Student; jace.jackson10@okstate.edu

### **Emergency department opioid prescribing trends among provider types: An analysis of the NHAMCS, 2019-2021**

**Background:** Despite efforts to mitigate high opioid prescription frequencies, previous research showed minimal change within emergency departments (ED) in the United States, and few studies investigate prescription provider types. Thus, our primary objective was to assess opioid prescribing rates by differing healthcare team members using data from the National Hospital Ambulatory Medical Care Survey (NHAMCS).

**Methods:** Using the 2019-2021 NHAMCS, we calculated the overall opioid prescription rate during ED visits by provider type. Next, we estimated opioid prescription rates by provider type annually and determined differences by year using design-based  $X^2$  tests and regression models.

**Results:** From 2019 through 2021, 7,428 of 50,548 visits involved opioids, representing 15.62% of all ED visits. During this timeframe, 16.59% of total encounters with opioid prescriptions were among attending/consulting physicians. This was followed by physician assistants (13.91%), nurse practitioners (10.67%), and residents (7.28%). Compared to 2019, opioid prescribing rates showed no significant changes; however, resident physicians showed a significant decrease, and RNs showed a significant increase.

**Discussion:** From our analysis, opioid prescribing rates in the ED were highest among attending/consulting physicians, and rates among physician assistants and nurse practitioners were higher than 10%. Resident physicians had a significant decrease in opioid prescriptions, while RNs had an increase—likely due to new laws enacted during this timeframe. Removing barriers to alternative pain management for acute and long-term care may lessen rates of opioid prescriptions—including patient and provider training, physical therapists inclusion, and osteopathic manipulative therapy incorporation.

**Keywords:** NHAMCS, Provider, Opioids, Prescribing, Emergency Department (EDs)

Graham Jameison, MAT, Josh Saurino, BS, Seth Sims, BS, Rachel Hazlitt, BS, Annes Elfar, BS, Mahad Chaudry, BS, Alec Young, BS, Andrew Tran, BS, Patrick Crotty, BS, Alicia Ito Ford, PhD, Matt Vassar, PhD

Graham Jameison, MAT, Medical Student; gjameis@okstate.edu

### **Current Trends in Artificial Intelligence Use in Otorhinology Research: A Cross-Sectional Analysis**

**Background:** Artificial intelligence (AI) is enhancing otorhinology research by improving data analysis, systematic reviews, and clinical applications. However, the use of AI in research practice raises concerns regarding transparency, ethical use, and reproducibility when compared to human authorship. This study evaluates how leading otorhinology journals address these challenges and opportunities through their specific author instructions and policies regarding AI use in content generation, image generation, proofreading, and other relevant tasks.

**Methods:** A cross-sectional review of the top 100 peer-reviewed otorhinology journals ranked by the 2023 SCImago SJR indicator was conducted. Data were extracted from each journal's "Instructions for Authors" to evaluate AI-related policies, including AI-specific reporting guidelines, authorship criteria, and the use of AI in manuscript preparation and image generation. Correlational analyses were performed to explore the relationship between AI policies and journal characteristics.

**Results:** Of the 100 journals evaluated, 54% addressed AI use in their instructions, with 52% prohibiting AI authorship while requiring disclosure of AI involvement in submissions. No journals discussed adherence to an AI-specific reporting guideline, despite 82% of journals reporting adherence to ICMJE guidelines. AI-generated content was allowed by 24% of journals, while 10% approved of AI-generated images. Journals with higher impact factors were more likely to include detailed AI policies, but significant gaps in standardization and guidance remain.

**Conclusion:** While many otorhinology journals recognize AI's role in research, few endorse AI-specific research guidelines, limiting the standardization and transparency of AI use. While many journals allow for the use of AI for the purpose of proofreading, most require the disclosure of AI use, regardless of its purpose in the research process. Moreover, most journals failed to address AI policies in any capacity, potentially leading to unregulated and undisclosed use within the field of otorhinology research. We recommend the adoption of comprehensive guidelines to ensure ethical, reproducible, and high-quality research in an age of continued AI developments

**Keywords:** Artificial Intelligence, Reporting Guidelines, Otorhinology, Transparency, Authorship

Trevon A. Jelinek, BS, **Cameron M. O'Brien, BS**, Alec J. Young, BS, Griffin K. Hughes, BA, BS, Chance K. Bratten, BS, Eli T. Paul, BS, Matt Vassar, PhD

Trevon Jelinek, BS, Medical Student; trevon.jelinek@okstate.edu

### **Usefulness of Orthopaedic Shoulder Surgery Trials: Are They Meeting Key Criteria?**

**Background:** Shoulder surgery is a significant subset of orthopaedic interventions, and randomized controlled trials (RCTs) are critical for advancing surgical techniques and informing clinical guidelines. However, poorly designed or inadequately reported RCTs make applying findings to clinical practice more difficult. This study applies a usefulness assessment tool developed by van 't Hooft et al. to evaluate the utility of shoulder surgery RCTs published in the past five years, aiming to identify trends and gaps to improve trial design and reporting.

**Methods:** This study evaluated RCTs on orthopaedic shoulder surgery published between January 1, 2019, and October 28, 2024. Using Medline and Embase, articles were screened for inclusion based on predefined criteria. Data extraction focused on general trial characteristics and fulfillment of 13 items within the usefulness criteria. Each criterion was scored from 0–2, with a maximum total score of 26. Statistical analysis included descriptive statistics for trial characteristics, linear regression models for scores and time, and a correlation analysis between core usefulness and transparency scores.

**Results:** The mean usefulness score was 13.0/26, with scores ranging from 6 to 23. Core usefulness scores showed a slight decline over time, while transparency scores exhibited an upward trend, leading to a modest overall increase in combined scores. Transparency items, such as conflict of interest and funding disclosures, were well-reported, while public availability of raw data and trial protocols scored poorly. Core usefulness items like problem base and feasibility were widely achieved, but pragmatism and value for money were frequently unmet. A moderate positive correlation ( $r = 0.29$ ,  $p = 0.0037$ ) was observed between transparency and core usefulness scores.

**Conclusions:** While transparency improvements have driven slight overall progress in trial quality, substantial gaps remain in key criteria like raw data availability and value for money. The findings highlight the need for journals and researchers to adopt comprehensive strategies to enhance the clinical impact of RCTs. This study underscores the value of structured assessment tools in identifying opportunities to optimize trial design and reporting, ultimately improving evidence-based care in orthopaedic shoulder surgery. The application of the usefulness tool reveals opportunities to strengthen RCT design and reporting, paving the way for more impactful orthopaedic research and better patient outcomes.

**Keywords:** Orthopaedic shoulder surgery, usefulness criteria, transparency, trial usefulness, clinical trial influence, trial design, trial reporting

Kellen Keefer, BS, **Jeanie Marchbanks, BS**, Alex Hagood, BSN, Taylor Gardner, BS, Brody Dennis, BS, Jacob Duncan, BA, Eli Paul, BS, Alicia Ito Ford, PhD, Matt Vassar, PhD

Kellen Keefer, BS, Medical Student; keferokstate@gmail.com

### **The State of Data Sharing in Plastic Surgery: A Cross-Sectional Analysis of Journal Practices and Author Adherence**

**Introduction:** Data sharing is crucial for transparency and reproducibility in research. We aim to evaluate data sharing practices in plastic surgery research, focusing on data sharing statements (DSS), identifying key trends, and assessing follow-through.

**Methods:** We conducted a systematic review of the top seven plastic surgery journals, selecting original research articles published from 2018 to 2023. Data extraction was performed in a masked duplicate manner, capturing DSS presence, funding sources, study design, and publication year. Trends in DSS inclusion over time, study designs, and journals were analyzed. A thematic analysis was conducted on DSS content. Corresponding authors of studies that stated data was available upon request were contacted to assess follow-through.

**Results:** Our review included 727 articles, with only 1.51% (11/727) including DSS. DSS prevalence varied, with the highest in *Aesthetic Plastic Surgery* (4.42%, 5/113) and the lowest in *Plastic and Reconstructive Surgery* (0.43%, 1/235). Clinical trials were the most likely to include DSS (1.92%, 9/469), followed by cohort studies (1.16%, 2/173). Private funding and certain publishers were negatively associated with DSS inclusion, while journal impact factors showed a positive correlation. Responses from authors were not received, indicating a gap between stated intentions and actual practices.

**Conclusion:** Data sharing practices in plastic surgery journals are inconsistent. Although DSS inclusion is encouraged, many studies still lack DSS, and the quality varies. Clearer mandates and enforcement are needed for effective data sharing.

**Keywords:** Plastic surgery, data sharing, transparency, reproducibility

Jessica Keyser, BS, Sasha Newkirk, BS

Jessica Keyser, BS, Graduate Student; jessica.keyser@okstate.edu

### **The Effectiveness of Intravenous Iron Supplementation on Fatigue in Non- Anemic Patients: Critically Appraised Topic**

Clinical Scenario: Iron deficiency without anemia is a common disorder found in many individuals. Patient may experience fatigue, lack of energy, and mood changes. One treatment option for this condition is supplementation, which can be done via diet, intravenously (IV), or orally. IV supplementation may be beneficial to treat fatigue in individuals with iron deficiency without anemia.

Clinical Question: What is the effect of intravenous iron supplementation on fatigue in non-anemic patients?

Summary of Key Findings: A search was conducted to determine the effect of IV iron supplementation on fatigue symptoms. Four studies discussing the use of IV iron supplementation and the effect on fatigue were included. Three studies demonstrated that IV iron supplementation decreased fatigue in iron-deficient individuals without anemia. One study demonstrated that there was no effect on fatigue utilizing IV methods of supplementation.

Clinical Bottom Line: The evidence suggests that there is moderate support for the use of IV iron supplementation to treat symptoms of fatigue in individuals with iron deficiency without anemia.

Strength of Recommendation: Based on the PEDro scale and JBI checklist, all of the articles should be included in this critically appraised topic.

Keywords: iron, supplementation, intravenous, fatigue

Kohl Kirby, BS, Noah Calvert, BS, Kaylyn Rowsey, BS, Jillian Brassfield, BS, Taylor Gardner, BS, Alec Young, BS, Patrick Crotty, BS, Andrew Tran, BS, Alicia Ito Ford, PhD, Matt Vassar, PhD

Kohl Kirby, BS, Medical Student; kohl.kirby@okstate.edu

### **Endorsement of Artificial Intelligence Guidelines Across Leading Neurology Journals: A Cross-Sectional Analysis**

**Background:** Artificial intelligence (AI) is revolutionizing neurology research by advancing data analysis, systematic reviews, and clinical applications. However, its integration introduces concerns around transparency, ethical practices, and reproducibility. This study explores how leading neurology journals address these issues in their author guidelines and policies.

**Methods:** A cross-sectional review was conducted of the top 100 peer-reviewed neurology journals, ranked by the 2023 SCImago SJR indicator. Data were extracted from each journal's "Instructions for Authors" to evaluate AI-related policies, including recommendations for AI usage, authorship criteria, and the use of AI in manuscript development and image creation. Correlational analyses were performed to examine associations between AI policies and journal characteristics.

**Results:** Of the 100 journals reviewed, 96% referenced AI use in their author instructions. The majority prohibited AI authorship but required authors to disclose AI involvement in research or manuscript preparation. AI-generated content was allowed by 77% of journals, while 50% approved the use of AI-generated images. Journals with higher impact factors were more likely to include specific AI guidelines, but significant inconsistencies and gaps in policy remain.

**Conclusion:** Although many neurology journals acknowledge AI's growing role in research, few offer robust AI-specific reporting guidelines, limiting clarity and uniformity. We recommend the creation of comprehensive AI guidelines to ensure ethical, reproducible, and high-quality research in the era of AI-driven innovation.

**Keywords:** Artificial Intelligence, Reporting Guidelines, Neurology, Transparency, Authorship



Chad Landgraf, MS, Lara Brooks, MS, Denna Wheeler, PhD

Chad Landgraf, MS, Staff; chad.landgraf@okstate.edu

### **Trends in Rural-Urban Births in Oklahoma**

**Introduction/Objectives:** Recent studies emphasize the accelerating decline in access to maternal healthcare in rural areas. Oklahoma faces these same challenges with maternity care deserts. Many Oklahoma counties also face persistent population loss. Fifty-three counties in Oklahoma experienced a population decline between 2010 and 2020, and 38 out of 77 counties in Oklahoma experienced a population decline between 1980 and 2020. Of these counties, 37 are rural, and 23 are home to either a Critical Access Hospital, Rural Emergency Hospital, or a closed hospital.

**Methods:** This analysis examines county-level population data in relation to births based on the mother's residency and location of occurrence. County-level decennial Census populations are utilized from the 1980, 1990, 2000, 2010, and 2020 Censuses. Birth data are derived from the Oklahoma State Department of Health's OK2SHARE data system, encompassing 1,965,305 births during the study period. A crosstab analysis categorizes all births by the mother's county of residence and county of occurrence. The data were aggregated into ten-year groups aligned with each decennial census (i.e., 1980–1989, 1990–1999, 2000–2009, and 2010–2019). This approach increases sample size and eliminates the risk of data suppression. Births to Oklahoma residents that occurred out of state, as well as births to non-residents that occurred in Oklahoma, were excluded from this analysis.

We calculated distances using ESRI's ArcGIS Pro by measuring the centroid-to-centroid distance between counties. These distances were applied to the birth data to estimate the average distance expectant mothers traveled to give birth. Counties were categorized as metro or nonmetro using the Rural-Urban Continuum Codes (RUCC).

**Results:** Women living in the 14 metro counties (RUCC of 1; counties in metro areas with populations of 1 million or greater) traveled 21% farther to give birth during the 2010–2019 decade compared to 1980–1989, with the average distance increasing from 19 miles to 21 miles. Thirteen of the 14 metro counties experienced population growth between 1980 and 2020, with four counties surpassing a 100% increase in population.

In contrast, women living in 19 counties classified with a RUCC of 9 (urban population under 5,000 and not adjacent to a metro area) traveled 42% farther during 2010–2019 compared to 1980–1989, with the average distance increasing from 62 miles to over 102 miles. Among these counties, 15 experienced population declines between 1980 and 2020.

As expected, the data demonstrate that the distance required to travel for labor and delivery services increases as a county's population decreases. These findings suggest that in Oklahoma, population decline in rural counties, coupled with the associated decline in healthcare services and access, has forced women in rural communities to travel farther from home to deliver their babies.

**Keywords:** Maternal health, Rural, Access

Justin Lane, BS, Senait Assefa, PhD, Gerwald Koehler, PhD

Justin Lane, BS, Graduate Student; justin.lane@okstate.edu

### **Identification and Characterization of *Talaromyces purpureogenus* for Antimicrobial Activity**

**Introduction:** Fungi are a rich source of secondary metabolites that potentially could be used as chemotherapeutic, immunomodulatory, or antimicrobial agents. Penicillin was first extracted from a fungus almost one hundred years ago. This revolutionized the field of medicine and saved countless lives. Unfortunately, pathogenic bacteria and fungi have become resistant to the current arsenal of antimicrobial medications and the need for new and novel antimicrobials is becoming urgent. In this study we have isolated a strain of *Talaromyces purpureogenus* and have begun to characterize its antimicrobial properties. These fungi have been recognized as producers of metabolites with antimicrobial, anticancer, and antioxidant properties.

**Methods:** Originally, we found a fungal contaminant with typical mold-like growth on a Sabouraud Dextrose agar (SDA) plate co-culture of *Bacillus subtilis* and *Candida albicans*. The mold exhibited a distinct red pigmentation of the agar and showed the inhibition of *B. subtilis* and *C. albicans*. The isolate was purified by subculturing on SDA and its genomic DNA was isolated for molecular typing by sequencing of the internal transcribed spacer (ITS) regions in the ribosomal RNA gene loci. Characterization of the red coloration surrounding agar colonies of the isolate was initiated using solubility experiments. We also have started challenge studies evaluating the isolate for antimicrobial activities in co-cultures with *Lactobacillus* strains, *B. subtilis*, and other fungi such as *Candida albicans* and *Rhizomucor pusillus*.

**Results:** Sanger sequencing of the ITS PCR amplicons generated with the ITS-1 - ITS-4 primer pair revealed sequence identity with *Talaromyces purpureogenus* database entries. Our isolate's secretion of red water-soluble dye and its morphology are consistent with published literature on this fungus. The initial challenge studies have revealed that the *T. purpureogenus* isolate exhibits antimicrobial activities towards bacteria and fungi.

**Conclusion:** We isolated a strain of *T. purpureogenus* that shows antagonistic effects towards other microbes. It will be essential to confirm these activities with other microbial challenge assays and isolate the growth inhibitory metabolite(s) for further characterization. Future studies will include the isolation of these active compounds by biochemical methods such as fractionation by Reverse Phase High Performance Liquid Chromatography (HPLC). The resulting fractions will be employed in challenge studies to determine which fractions reveal antimicrobial properties. Mass spectrometry will be used for the identification of active components. The *T. purpureogenus* strain identified in this study could be a potential resource for designing novel antimicrobials.

**Keywords:** Fungus, Antimicrobial, PCR, DNA

Ryan Langerman, BS, Lucas Martinez, BS, Kurt Mahnken, BA, Josh Major, BS, Wyatt Compton, MS, Alec Young, BS, Andrew V. Tran, BS, Patrick Crotty, BS, Alicia Ito Ford, PhD, Matt Vassar, PhD

Ryan Langerman, BS, Medical Student; riclang@okstate.edu

**Endorsement of Artificial Intelligence Guidelines Across Leading Emergency Medicine Journals: A Cross-Sectional Analysis.**

**Background:** Artificial intelligence (AI) is revolutionizing Emergency Medicine research by improving data analysis, systematic reviews, and clinical practices. However, its incorporation raises issues related to transparency, ethical considerations, and reproducibility. This study examines how prominent Emergency Medicine journals address these challenges and opportunities through their author guidelines and policies.

**Methods:** A cross-sectional review of the top 100 peer-reviewed Emergency Medicine journals, ranked by the 2023 SCImago SJR indicator, was conducted. Information was extracted from each journal's "Instructions for Authors" to assess AI-related policies, including AI-specific reporting recommendations, authorship criteria, and the utilization of AI in manuscript creation and image generation. Correlational analyses were performed to explore the relationship between AI policies and journal characteristics.

**Results:** Among the 100 journals reviewed, 56% addressed AI use in their guidelines, with most journals prohibiting AI authorship but mandating the disclosure of AI involvement in submissions. AI-generated content was permitted by 21% of journals, while 19% authorized AI-generated images. Journals with higher impact factors were more inclined to include comprehensive AI policies, though significant inconsistencies and gaps in standardization remain.

**Conclusion:** Although numerous Emergency Medicine journals acknowledge AI's role in research, few support AI-specific reporting guidelines, hindering the standardization and transparency of AI usage. We advocate for the adoption of thorough guidelines to ensure ethical, reproducible, and high-quality research in the age of AI-driven progress.

**Keywords:** Artificial Intelligence, Reporting Guidelines, Emergency Medicine, Transparency, Authorship

Samuel Lassiter, BS, Makalie Lackey, BS, Jeanie Marchbanks, BS, Tag Harris, BS, Alex Hagood, BSN, Jacob Duncan, BA, Andrew V. Tran, BS, Patrick Crotty, BS, Alec Young, BS, Alicia Ito Ford, PhD, Matt Vassar, PhD

Samuel Lassiter, BS, Medical Student; samlass@okstate.edu

### **Evaluating Guidelines for Artificial Intelligence in Critical Care Journals: Addressing Research Integrity and Transparency**

**Introduction/Objectives:** Artificial intelligence (AI) is revolutionizing Critical Care and ICU Medicine research by improving data analysis, systematic reviews, and clinical applications. However, its use raises concerns about transparency, ethical practices, and reproducibility. This study examines how leading Critical Care and ICU Medicine journals address these issues through their author instructions and policies.

**Methods:** A cross-sectional review was conducted on the top 100 peer-reviewed Critical Care and ICU Medicine journals, ranked by the 2023 SCImago SJR indicator. Data from each journal's "Instructions for Authors" were analyzed to assess AI-related policies, including AI-specific reporting guidelines, authorship criteria, and the use of AI in manuscript writing and image creation. Correlational analyses were performed to explore the relationship between AI policies and journal characteristics.

**Results:** Of the 100 journals reviewed, 54% mentioned AI use in their instructions, with most prohibiting AI as authors but requiring disclosure of AI involvement. AI-generated content was accepted by 12% of journals, and 16% allowed AI-generated images. Journals with higher impact factors were more likely to include comprehensive AI policies, though there remains a lack of standardization and detailed guidance.

**Conclusion:** Although many Critical Care and ICU Medicine journals acknowledge AI's growing role in research, few promote AI-specific reporting guidelines, leading to inconsistencies in transparency and standardization. The adoption of comprehensive guidelines is recommended to ensure ethical, reproducible, and high-quality research in the age of AI-driven advancements.

**Keywords:** Artificial Intelligence, Reporting Guidelines, Critical Care and ICU Medicine, Transparency, Authorship

Jun Young Lee, BS, Jania Flake, BS, Jennifer Volberding, PhD

Jun Young Lee, BS, Graduate Student; junyoung.lee@okstate.edu

**The Effectiveness of Isolated Eccentric Strengthening Exercise Compared to Combination Muscle Contraction Exercise in Reducing Dysfunction in Patients with Achilles Tendinopathy: A Critically Appraised Topic**

Clinical Scenario: Achilles tendinopathy (AT) is a prevalent overuse injury affecting the Achilles tendon and rehabilitation frequently incorporates eccentric contraction exercises. This critically appraised topic assesses the comparative effectiveness of isolated eccentric exercises and a combination of contraction types in reducing dysfunction, utilizing the Victorian Institute of Sport Assessment-Achilles (VISA-A) scale as a measure.

Clinical Question: For AT patients, are isolated eccentric strengthening exercises as effective as combination with concentric or isometric muscle contraction to decrease dysfunction?

Summary of Key Findings: A literature search was conducted on the effectiveness of an eccentric-only exercise protocol and an eccentric with concentric or isometric exercise protocol to improve the VISA-A Scale score of AT patients. All studies demonstrated that there was no significant difference in VISA-A Scale score improvement between the eccentric exercise only group and the eccentric and concentric exercise group or the eccentric and isometric exercise group.

Clinical Bottom Line: The evidence suggests that eccentric exercise alone can reduce dysfunction in patients with AT.

Strength of Recommendation: There is a grade B recommendation to support the effectiveness of isolated eccentric exercise for improving dysfunction in AT patients.

Keywords: Achilles injury management, eccentric exercise protocol, VISA-A scale

Matthew Lowrie, BS, Kurt Mahnken, BA, Jared VanVleet, BS, Griffin Hughes, BA, BS, Matt Vassar, PhD

Matthew Lowrie, BS, Medical Student; matthew.lowrie@okstate.edu

### **Assessing Reproducibility in Military Medical Research: A Cross-Sectional Study of Open Access Practices in Unclassified Publications (2013–2023)**

**Background:** Accessibility and transparency in scientific research are essential for fostering reproducibility, collaboration and the advancement of knowledge. Military medical research, which is critical for innovation, defense strategy, and medical advancements, is typically disseminated through specialized journals. Recent initiatives by the federal government have pushed to make federally funded research accessible to the general public. However, concerns persist about the degree to which military research articles are openly accessible, limiting the ability of external researchers, policymakers, and the public to engage with these findings.

**Methods:** This cross-sectional study evaluates reproducibility of articles published in military-focused journals from 2013-2023. Pertinent journals were identified using Google Scholar and a random sample of 250 articles was selected to be included in our study. Two investigators (ML & KM) extracted data on key reproducibility metrics in a masked, duplicate fashion, including availability of data and materials, adherence to open-access policies, and the disclosure of conflicts of interest. The focus of this study was strictly accessing military research articles published in peer-reviewed academic and professional journals, which are not classified or subject to national security restrictions.

**Results:** Preliminary analysis indicates that a significant proportion of military research articles remain behind paywalls, restricting access for those outside institutional or governmental networks. This was evidenced by 81 (32.8%) of articles inaccessible due to not being open-access, while the investigators were able to access 166 (67.2%) of the articles on a control network without subscriptions to any journals. Of the articles from which data was extracted, 145 were of a study design containing empirical data while 57 had no empirical data. Additionally, three articles were removed for being duplicated in the retrieval. Articles with open-access availability were also evaluated for the transparency of their methods, data sharing practices, and potential for reproducibility. Of accessible articles, 5 (3.0%) stated that their materials were available, 23 (13.9%) stated that their data was available, 2 (1.3%) linked to an accessible protocol, 81 (48.8%) lacked a conflict of interest statement, and 42 (25.3%) lacked a funding statement.

**Conclusion:** Ensuring the open accessibility of military research articles is crucial for promoting innovation, collaboration, and evidence-based policy decisions. This study highlights existing gaps in accessibility and provides recommendations for improving transparency in military research publications. By advancing open-access practices, the broader scientific and policy communities can better utilize military research to address global challenges and technological advancements.

**Keywords:** Military Research, Open-Access, Transparency

Josh Major, BS, Klaire Wild, BS, Annes Elfar, BS, Brody Dennis, BS, Eli Oldham, BS, Alex Hagood, BSN, Eli Paul, BS, Jake X. Checketts, DO, Alicia Ito Ford, PhD, Matt Vassar, PhD

Josh Major, BS, Medical Student; josh.major@okstate.edu

### **Evaluating Data-Sharing Policies and Author Compliance in Leading Orthopedics Journals**

**Introduction/Objectives:** Orthopedic surgery is a critical field, impacting global healthcare expenditure and patient outcomes. Despite substantial research funding, issues of transparency and reproducibility persist, undermining the credibility of published findings. Data-sharing initiatives aim to address these challenges by promoting accessibility and enhancing research reliability. We aimed to assess the landscape of data-sharing practices within orthopedic surgery, focusing on the top orthopedic journals from 2020 to 2023.

**Methods:** Original research articles from ten of the top orthopedic journals were screened and analyzed for data-sharing statements (DSS). Furthermore, we identified influential variables on the inclusion of DSS in orthopedic clinical-studies; and thematically analyzed their content to identify prevalent themes. Lastly, corresponding authors were contacted to assess their willingness to share their data.

**Results:** Of the 1,084 articles reviewed, only 14% included DSS. *The Journal of Bone and Joint Surgery* demonstrated the highest proportion of articles with DSS. Over time, clinical trials exhibited an increasing trend in DSS adoption contrasting with consistently low rates among cohort studies. Thematic analysis identified *gatekeeper role* and *conditional data availability* as predominant themes within orthopedic DSS. Of the emails sent to corresponding authors, only 28 (24.35%) responded; and of those who responded only 12 (42.86%) expressed a willingness to share their data.

**Conclusions:** Our findings underscore a significant disparity in data-sharing practices across orthopedic journals, highlighting the need for standardization and mandates for DSS. Adopting the Transparency and Openness Promotion (TOP) Guidelines can enhance accountability and foster a culture of open science within the field. By addressing these shortcomings, orthopedic journals can improve research reproducibility and advance scientific knowledge effectively.

**Keywords:** data-sharing, orthopedics, systematic review

Josh Major, BS, **Kurt Mahnken, BA**, Alec Young, BS, Cameron O'Brien, BS, Andrew V. Tran, BS, Patrick Crotty, BS, Alicia Ito Ford, PhD, Matt Vassar, PhD

Josh Major, BS, Medical Student; josh.major@okstate.edu

### **Exploring the Endorsement and Implementation of Artificial Intelligence Guidelines in Leading Orthopaedic and Sports Medicine Journals: A Cross-Sectional Study**

**Background:** Artificial intelligence (AI) is increasingly integrated into orthopaedic research and practice, offering transformative capabilities in diagnostics, treatment planning, and systematic data analysis. However, its adoption raises ethical, methodological, and policy challenges, particularly regarding transparency, authorship, and reproducibility.

**Objective:** This study aims to evaluate the current policies of orthopaedic and sports medicine (OSM) journals concerning AI use in research, focusing on transparency requirements, ethical considerations, and reporting standards.

**Methods:** We conducted a cross-sectional review of the "Instructions for Authors" from the top 100 orthopaedic and sports medicine journals ranked by the 2023 SCImago Journal Rank indicator. Data on AI-specific reporting guidelines, policies on AI-generated content, images, and authorship were extracted. Descriptive statistics and correlational analyses were performed to assess trends and associations.

**Results:** Of the 100 journals analyzed, 78% referenced AI in their guidelines, primarily addressing authorship criteria and disclosure requirements. Only 2% endorsed AI-specific reporting guidelines, while 22% lacked any AI-related policy. Journals were more likely to permit AI for content generation (66%) than for image generation (43%). Transparency regarding AI use during manuscript preparation was required by 78% of journals, aligning with International Committee of Medical Journal Editors (ICMJE) recommendations.

**Conclusion:** Despite widespread acknowledgment of AI's role in research, the adoption of AI-specific reporting guidelines remains rare, underscoring a critical need for standardized policies. OSM journals should establish clear and comprehensive AI-related guidelines to ensure transparency, reproducibility, and ethical rigor in AI-integrated research.

**Keywords:** Artificial Intelligence, Reporting Guidelines, Orthopaedic Surgery, Transparency, Authorship



Josh Major, BS, Laurel Marsh, BS, McKenna W. Box, MD, Troy Puga, DO, John T. Riehl, MD

Josh Major, BS, Medical Student; josh.major@okstate.edu

### **Safety and Utility of Magnetic Resonance Imaging of Patients with External Fixators: A Systematic Review**

**Background:** External fixation devices are essential in orthopedic trauma care for stabilizing fractures and facilitating recovery. However, their presence creates unique challenges for Magnetic Resonance Imaging (MRI) due to potential image artifacts and heating effects, which may compromise diagnostic efficacy and patient safety. This study aims to evaluate the impact of external fixators on MRI image quality and to provide evidence-based recommendations for their safe and effective use.

**Methods:** We conducted a systematic analysis of the effects of external fixation systems during MRI. Both clinical and experimental data were reviewed, focusing on artifact size, image distortion, and potential heating of fixator components. Variables such as fixator material, orientation within the scanner, and imaging parameters were assessed to determine their influence on imaging outcomes.

**Results:** External fixators generated varying degrees of image artifacts, predominantly influenced by the type of material (stainless steel vs. titanium) and their position relative to the imaging plane. Titanium fixators exhibited smaller artifact profiles compared to stainless steel. Optimization of imaging parameters, including sequence selection and artifact reduction techniques, significantly mitigated distortion. No clinically significant heating was observed under standard MRI conditions.

**Conclusions:** External fixation devices impact MRI image quality, but their effects can be minimized with careful selection of materials and imaging protocols. Titanium fixators are preferable for reducing artifacts, and optimized imaging techniques can enhance diagnostic accuracy. These findings support the safe integration of MRI in patients with external fixation systems, advancing evidence-based orthopedic care.

**Keywords:** external fixators, MRI, image artifacts, orthopedic trauma, titanium, stainless steel.

Laurel Marsh, BS, Mataeo Anderson, BS, **Alec Young, BS**, Jacob LaMar, BS, Zachary Arnold, BS, Jason Deck, MD, Amar Patel, DO, Jeremy Scott, DO

Alec Young, BS, Medical Student; alec.young@okstate.edu

### **Greater Trochanter Fracture and Fixation in a Teenage Athlete**

Introduction: Greater trochanter fractures are rare subtypes of hip fractures<sup>1</sup>, with limited reports in the literature, resulting in disparities in demographics and management protocols.<sup>2</sup> Isolated greater trochanter fractures can occur due to avulsion injuries in younger patients caused by strong hip abduction, as well as pathological processes or traumatic injuries in the elderly. Fractures displaced by more than one centimeter typically require open reduction internal fixation (ORIF), while others can often be managed nonoperatively.<sup>3</sup> These displaced fractures more pressing concerns due to the risk of avascular necrosis (AVN) of the femoral head, which may occur if the medial circumflex femoral artery is disrupted as it traverses the greater trochanter<sup>4</sup>. Pediatric patients are particularly at risk for traumatic AVN in the setting of displaced fractures. Unlike skeletally mature patients, whose vascular supply to the femoral head may include contributions from the metaphysis, pediatric patients rely heavily on the medial femoral circumflex artery for femoral head blood supply. This reliance increases their risk of AVN with greater displacement and delayed reduction. Although displaced fractures necessitate surgical intervention, ORIF carries inherent risks, including potential iatrogenic injury to the medial circumflex femoral artery, which could also result in femoral head AVN.

Case Description: A 14-year-old male presented to the emergency department with complaints of right hip pain following a “dog-pile” manner while playing football. Radiographs of the right hip revealed an isolated, displaced right greater trochanter fracture. Subsequent MRI confirmed the fracture as isolated, without intertrochanteric or intraarticular extension. Upon orthopedic consultation, ORIF was determined as the most appropriate management. During surgery, the fracture was visualized and reduced by forcefully internally rotating the greater trochanteric apophysis. Reduction was confirmed intraoperatively using fluoroscopic imaging. A semitubular Smith and Nephew plate was applied to the femur, and screws were inserted to secure the plate. Following fixation, the surgical team mobilized the patient’s hip to confirm stability and absence of fracture movement. Postoperatively, the patient was discharged with instructions for touch-down weight bearing using crutches and a plan to gradually increase weight-bearing activities over two to four weeks. At a two-week follow-up, the patient exhibited a well-healed incision, intact motor and sensory function, and no complications. Weight bearing was gradually increased over the following weeks. At the eight-week follow-up, the patient reported no new issues and showed satisfactory progress.

Discussion/Conclusion: Isolated greater trochanter fractures are a rare subset of hip fractures, with minimal literature detailing their etiology, management, and prognosis, particularly in young athletes. Prompt and definitive treatment, such as ORIF, is crucial for minimizing complications like AVN and facilitating return to play. However, the surgical approach itself poses risks, including iatrogenic injury to the medial circumflex femoral artery, which could jeopardize femoral head viability. Given these dual risks, comprehensive preoperative planning is essential to optimize outcomes. The rarity of this injury underscores the importance of recognizing unusual pathologies and generating sufficient literature to guide management for all age groups and injury mechanisms.

Keywords: Greater trochanter fracture, Open reduction and interfixation, Avascular necrosis

Grayson McBee, BS, Madison Dinh, BS, Ahmed Elghzali, BS, Chris Tran, BS

Grayson McBee, BS, Medical Student; gmcbee@okstate.edu

### **Endorsement of Artificial Intelligence Guidelines Across Leading Ophthalmology Journals: A Cross-Sectional Analysis.**

**Background:** Artificial intelligence (AI) is transforming ophthalmology by enhancing data analysis, facilitating systematic reviews, and improving clinical applications. However, its incorporation into research and publishing introduces challenges related to transparency, ethical considerations, and reproducibility. This study explores how top ophthalmology journals address these issues and leverage AI's potential through their author guidelines and editorial policies.

**Methods:** A cross-sectional review of the top 100 peer-reviewed ophthalmology journals, ranked by the 2023 SCImago SJR indicator, was conducted. Data were extracted from the "Instructions for Authors" of each journal to assess AI-related policies, with a focus on authorship criteria, AI-specific reporting guidelines, and the use of AI in manuscript preparation and image generation. Correlational analyses were conducted to investigate potential links between AI policies and the distinctive characteristics of each journal.

**Results:** Among the 100 journals reviewed, 79% addressed AI use in their author guidelines, with most prohibiting AI authorship but requiring disclosure of AI involvement in submissions. AI-generated content was permitted by 62% of journals, while 24% accepted AI-generated images. Journals with higher impact factors were more likely to implement detailed AI policies; however, significant gaps in standardization and guidance persist.

**Conclusion:** Although many ophthalmology journals acknowledge AI's growing role in research, few have adopted AI-specific reporting guidelines, limiting the consistency and transparency of AI integration. We advocate for the development and adoption of comprehensive guidelines to promote ethical, reproducible, and high-quality research in this evolving landscape of AI-driven innovation.

**Keywords:** Artificial Intelligence, Reporting Guidelines, Ophthalmology, Transparency, Authorship

Caitlin McCormick, BS, **Tanner Profice, BS**, Kaylyn Rowsey, BS, Jillian Brassfield, BS, Alexandra Shumard, BS, Patrick Crotty, BS, Andrew V. Tran, BS, Alec Young, BS, Alicia Ito Ford, PhD, Matt Vassar, PhD

Caitlin McCormick, BS, Medical Student; caitlin.mccormick@okstate.edu

### **Endorsement of Artificial Intelligence Guidelines Across Leading Obstetrics and Gynecology Journals: A Preliminary Cross-Sectional Analysis**

Background: Artificial intelligence (AI) is transforming research in Obstetrics and Gynecology by advancing data analysis, facilitating systematic reviews, and

enhancing clinical applications. However, its adoption raises concerns related to transparency, ethical considerations, and reproducibility. This study investigates how leading Obstetrics and Gynecology journals address these concerns and opportunities through their author instructions and editorial policies.

Methods: A cross-sectional analysis was conducted on the top 100 peer-reviewed Obstetrics and Gynecology journals, ranked by the 2023 SCImago SJR indicator. Information was collected from each journal's "Instructions for Authors" to assess AI-related policies, including specific guidelines for reporting AI use, authorship criteria, and the role of AI in manuscript development and image creation. Correlation analyses were used to explore the relationship between AI-related policies and the journals' characteristics.

Results: Among the 100 journals reviewed, 92% included guidance on AI usage in their author instructions. Most journals prohibited AI authorship while mandating disclosure of AI involvement in manuscript submissions. While 14% of the journals allowed AI-generated content, only 7% permitted AI-generated images. Journals with higher impact factors were more likely to have detailed AI policies, although there were notable gaps in standardization and clarity.

Conclusion: Although many Obstetrics and Gynecology journals recognize the growing influence of AI in research, few have implemented specific AI reporting guidelines (RGs), limiting the consistency and transparency of AI usage. We advocate for the development of robust and standardized guidelines to ensure that research remains ethical, reproducible, and of high quality in this new era of AI innovation.

Keywords: Artificial Intelligence, Reporting Guidelines, Obstetrics and Gynecology, Transparency, Authorship

Daniel Molina, BS, Luis Frias Perez, BS, Payton Clark, BA, BS, Josh Autaubo, BS, Merhawit Ghebrehiwet, BS, Andrew Wilson, BS, Russell Arellanes, DO, Jean-Maria Langley, DO, Alicia Ito Ford, PhD, Matt Vassar, PhD

Daniel Molina, BS, Medical Student; danmoli@okstate.edu

### **Addressing Recruitment and Retention Gaps in Laryngeal Cancer Clinical Trials: A Cross-Sectional Study**

**Objective:** To examine recruitment and retention strategies, focusing on historically marginalized populations within laryngeal cancer clinical trials since 2018.

**Methods:** After identifying relevant laryngeal cancer trials from Embase (Elsevier) and MEDLINE (PubMed), a standardized Google Form was used to extract relevant article characteristics including mention of recruitment or retention strategies aimed at historically marginalized groups. Two of the authors carried out data extraction in a masked duplicate fashion. Trials meeting predefined inclusion criteria (i.e. publication after 2018, conducted in a country with an Ethnic Fractionalization Index (EFI) of  $\geq 0.3$ , and with intervention for laryngeal cancer patients) were selected for our cross-sectional analysis.

**Results:** Of the 38 included trials, only 3 (7.9%) discussed implementing strategies to improve participant retention while none (0%) mentioned any recruitment strategies. Only two (5.3%) cited limitations related to recruitment with the most common being travel distance for participants.

**Conclusion:** Laryngeal cancer studies lacked reporting of diversity-focused recruitment strategies. Given the recognized need for diverse participation in cancer studies, more comprehensive implementation of these strategies is critical for improving outcomes and decreasing inequities among patients. Transparent discussion of enrollment methods by publications will establish broader generalizability in laryngeal cancer trials.

**Keywords:** Laryngeal Cancer, Cross-Sectional Study, Diversity

Jacksen Moore, BS, **Khanh Nguyen, BS**, Brody Dennis, BS, Mahad Chaudhry, BS, Annes Elfar, BS, Eli Oldham, BS, Eli Paul, BS, Jacob Cohn, DO, Alicia Ito Ford, PhD, Matt Vassar, PhD

Jacksen Moore, BS, Medical Student; jacksen.moore.chs@gmail.com

### **Assessing the Prevalence, Quality, and Compliance of Data Sharing Statements in Gastroenterology Publications: A Cross- Sectional Analysis**

**Objective:** To examine the current state of data sharing practices in gastroenterology literature, focusing on data sharing statements (DSS) and identifying influential factors on DSS inclusion.

**Background:** High-quality, reproducible research is crucial in addressing the widespread prevalence of gastrointestinal diseases. Data sharing practices enable researchers to access studies more easily, enhancing reproducibility. Our study aims to analyze the inclusion and influence of DSS in top gastroenterology journals.

**Methods:** We conducted a cross-sectional analysis to examine the use and contents of DSS in gastroenterology clinical trials. Using Clarivate's Journal Citation Reports™, we selected five leading gastroenterology journals. Then, we searched MEDLINE (PubMed) for original research articles published between January 1, 2018 to December 31, 2023. In a double blind, duplicate manner, data was extracted on DSS presence, funding source, study design, and open-access status. We then conducted a thematic analysis of all DSS. Additionally, authors were contacted and given 14 days to respond or share data to investigate adherence to their DSS.

**Findings:** Of the 953 articles that met inclusion criteria, 400 (400/953; 42.0%) contained a DSS. Open access articles had a higher likelihood of containing DSS (estimate = 0.413;  $p < 0.05$ ). *The Lancet Gastroenterology and Hepatology* has the highest percentage of DSS (159/194; 82.0%), while *Clinical Gastroenterology and Hepatology* has the lowest percentage of DSS (33/256; 12.9%). Impact factor is a significant indicator for DSS (estimate = 0.138,  $p = 0.01$ ). Finally, 'conditional data availability' was the most common data theme in our study (225/303; 74.3%). Over half (153/284 (53.9%) of authors contacted did not respond to our request for sharing data.

**Interpretation:** Our findings reveal significant variability in data-sharing statement inclusion and adherence among top gastroenterology journals. Journals with mandatory data-sharing policies demonstrated higher compliance, while open-access status and journal impact factor were positively associated with data-sharing practices. However, a notable gap remains in authors' follow-through on stated data-sharing commitments.

**Keywords:** Gastroenterology, Research Transparency, Cross- Sectional Study

Kale Moreland, BS, **Alex Baldridge, BS**, Trevor Magee, BS, Reece Anderson, DO, Elizabeth Keene, BA, Ashley Lesser, BS, Charles Marchese, MS, Matt Vassar, PhD

Alex Baldridge, BS, Medical Student; alex.baldridge@okstate.edu

### **Health Inequities and Research Gaps for Bladder Cancer in the United States: A Scoping Review**

**Introduction/Objectives:** Bladder cancer is a significant health issue in the United States, with over 83,000 new cases and nearly 17,000 deaths annually. The survival rate varies widely, with a 5-year relative survival rate of 78%, dependent on factors like disease stage at diagnosis. Despite established risk factors, health inequities persist, disproportionately affecting marginalized populations. Although health inequities research has grown, healthcare access remains inequitable, with race, ethnicity, and socioeconomic status serving as key determinants of health outcomes. This scoping review seeks to examine gaps in health inequity research for bladder cancer.

**Methods:** Following the Joanna Briggs Institute and PRISMA-ScR protocols, a scoping review of PubMed and Embase was conducted to identify gaps and trends in health inequities research for bladder cancer in the United States. Articles from 2016-2024 were included based on the NIH distinction of inequities which were race and ethnicity, sex or gender, LGBTQIA+ identity, underserved rural populations, education level, income, and occupation status. Screening and data abstraction were performed in a masked, double-blind fashion. Frequencies and historical trends of inequities examined were reported.

**Results:** Our final sample included 90 articles. Overall, the number of articles studying health inequities increased each year. Race and ethnicity were the most commonly studied inequity (n=83; 92.2%), followed by sex and gender (n=74; 82.2%). The least commonly studied inequity was LGBTQIA+ identity, with zero.

**Conclusion:** Health inequities for bladder due to race or ethnicity and sex or gender are well-studied within bladder cancer, while LGBTQIA+ status has yet to be examined. Further work is needed to promote research to fill this gap.

**Keywords:** Inequities, Race, Gender, Bladder Cancer

Bailey Morgan, BS, Daxton Butler, BS, Hannah M. Congleton, BS, Ryan Cranna, BS, Justin Rein, BS, Gabrielle Smith, BS, Traber Smithson, BS, Lauren Streeter, BS, Naoma Tow, BS, Ipe Paramel, MHA, Marjorie Erdmann, PhD

Bailey Morgan, BS, Medical Student; bailey.morgan10@okstate.edu

### **LEAN Healthcare: Identifying 'Easy Target' to Improving Referral Management Efficiency at a Midsized Urban Hospital: Digital Blindness**

Introduction/Objectives: Systemic operational inefficiencies in health systems can threaten patient care; therefore, health systems are motivated to identify common barriers that are quick to resolve.

In a study focused on reducing referral processing wait times, common systemic barriers to efficient referral, prior authorization (PA) management and scheduling were revealed. Their magnitude of burden to overall process efficiency was measured and compared. Of particular interest was measuring the burden from digital blindness (DB), a condition describing when frontline workers are blind to information needed to coordinate patient care optimally because the information is not visible on their software systems or access approved user interface.

Methods: A LEAN healthcare team commissioned by a midsized urban hospital investigated root causes to delays in the referral management processes. Eight osteopathic medical students and one graduate student were trained in LEAN methods via lecture and simulation. The team observed and interviewed staff, gathered insights and current protocols of related departments, and created a list of all process delays. Using systemic barrier typologies from Erdmann, et al 2024, the team identified which common barrier types contributed to each delay on the list. The team calculated the burden of each type by dividing each barrier's unique contribution frequency by total number of delays.

Results: Process mapping identified four relevant departments to referral management - Admissions Scheduling, Admissions Authorizations, Outpatient Rehabilitation, and Interventional Radiology. Across departments, nine employee workflows were identified as directly contributing to 73 total delays. In total, 30.1% (22/73) delays were driven by 'External System Influences,' factors beyond the control of hospital staff or hospital administration purview such as insurance prior authorization processes. 69.9% of delays were 'Internal Systemic Barriers.' Internal barriers included technology-based and management-based barriers. Technology-based barriers 39.7% (29/73) were caused by DB (19.1%; 14/73) and technology system settings (20.5%; 15/73). Management contributed to PA delays in 61.6% (45/73) of cases, consisting of workforce shortage factors and delays caused by policies and procedures. **E**staff identified DB as the simplest issue to resolve, after implementation, simple software 'fixes' immediately improved workflows and interdepartmental collaboration.

Conclusions: While referral management is plagued with external influences, most delays originated from within the hospital system. While management-based barriers such as training lapses and insufficient workforce contributed to more delays, the easier-to-resolve technology-based barriers contributed to 40% wherein system settings hindered staff from managing work queues optimally and DB hindered staff by limiting their knowledge of referrals' true status. Addressing DB can be a low effort solution with significant impacts that exponentially improves outpatient referral and PA outflow times.

Keywords: digital blindness, healthcare efficiency, referrals, prior authorization



McKayla Muse, DO, Kyrsten B. Valentine, BSc, Alex Baldrige, BS

McKayla Muse, DO, Resident Physician; mckayla.muse@okstate.edu

### **Paraneoplastic renal tubular acidosis secondary to ovarian teratoma**

Background: Renal tubular acidosis (RTA) is a relatively uncommon disorder, often linked to autoimmune conditions or adverse effects of certain medications. It is rare for clinicians to encounter this disorder during their medical practice. There are 3 distinct types: type 1 (distal), type 2 (proximal), and type 4 (hypoadosteronism). Etiology of a specific case of RTA can be difficult to pin, which is what prompted us to get further imaging. Our case report is going to reveal a rare relationship between RTA and an ovarian teratoma. Ovarian teratomas are a type of germ cell tumor that are composed of somatic tissue, typically ectoderm, endoderm, and mesoderm. These tissues are foreign to the anatomic site they are found in. More than 95% of ovarian teratomas are mature cystic teratomas which are generally asymptomatic. If symptoms do occur, they are typically associated with the size of the teratoma itself.

Case Presentation: This case begins with a female patient presenting to the emergency department with acute paralysis of all four of her extremities. Initial laboratory results revealed a potassium value of 1.5mEq/L. Consistent with this hypokalemia, EKG changes showed distinct U-waves. This patient was promptly treated with aggressive potassium repletion. Interestingly, the potassium failed to rise as expected, so focuses on potassium loss were explored. A comprehensive work-up ultimately led to a working diagnosis of renal tubular acidosis (RTA). A CT scan of the abdomen revealed a large ovarian teratoma. Interestingly, this patient had a history of a similar mass previously which was resected successfully in the past. Surgical removal of the teratoma was indicated, and after the procedure, her potassium was normalized appropriately. This raised an intriguing question: 'Could this teratoma be the source of her hypokalemia?' Her paralysis corrected as her potassium was replenished, and she was able to safely discharge from the hospital with oral potassium supplementation and close follow-up. At subsequent follow-ups, her potassium did remain within normal limits with intermittent lowering that was far less severe than her initial presentation.

Discussion: This case report aims to highlight a rare presentation of severe symptomatic hypokalemia potentially linked to an ovarian teratoma with underlying autoimmune or paraneoplastic factors. The concurrence of RTA and ovarian teratomas are exceedingly rare within scientific literature. With the presentation of this case, we emphasize the potential value of exploring paraneoplastic syndromes associated with ovarian teratomas and subsequent clinical implications.

Keywords: RTA, teratoma, hypokalemia, paraneoplastic

Nandini Narayana, MPhil, Sharmin Jahan, PhD

Nandini Narayana, MPhil, Graduate Student; nandini.narayana@okstate.edu

### **Digital Dilemmas: Influence of Peer Pressure and Attitude Towards Digital Privacy in Social Media Users**

**Introduction:** Technology has become integral to day-to-day life in the digital era, particularly social media platforms such as Facebook, X, YouTube, and Instagram. They are now the most common way to connect billions of people worldwide. Social media has transformed how people communicate, share information, build communities, and foster global connections at our fingertips. (Bengtsson & Johansson, 2022). However, the widespread use of social media has also raised concerns regarding privacy, misinformation and fake news, online addiction, bullying and harassment, digital peer pressure, and mental health impacts (Dhiman, 2023). One of the rising concerns is the dilemma between digital peer pressure and digital privacy, where individuals struggle to balance social acceptance with protecting personal information (McClain, 2023). To address this issue, the current study examines the influence of digital peer pressure on the understanding and practices of digital privacy among social media users. It provides an understanding of the behaviors and attitudes of social media users.

**Method:** A systematic survey questionnaire was developed to examine the understanding of digital peer pressure and digital privacy among social media users. The survey was created using Google Forms, an online data collection tool. The survey link was shared across various online and social media communities to reach a diverse participant pool. Data was collected from individuals willing to participate in the survey voluntarily and directed to the survey link. The participants in the study were mostly between 18 and 44 years old, with the majority of them having an education level of at least a master's degree. The collected data was then analyzed using tools like MS Excel and Python.

**Results:** The study findings reveal the influence of digital peer pressure on users' understanding of digital privacy practices. All users in the study prioritized social acceptance over privacy, with each having at least one social media platform. Many participants indicated that they agreed to the privacy policy without reading it and often shared personal information despite privacy concerns. Additionally, the study observed that many participants were aware of digital privacy, contributing to a somewhat improved social environment.

**Conclusion:** The study highlights the need for increased awareness and education on digital privacy to help users manage the challenges of digital peer pressure. Addressing this issue is needed for creating a safe digital environment for all users.

**Keywords:** Digital peer pressure, digital privacy, digital technology, social media, mental health, impact, digital platforms, dilemmas

Sasha Newkirk, BS, **Jessica Keyser, BS**, Jennifer Volberding, PhD

Sasha Newkirk, BS, Graduate Student; sasha.newkirk@okstate.edu

### **The Efficacy of Extracorporeal Shockwave Therapy for Chronic Greater Trochanteric Tendinopathy**

**Introduction/Objectives:** Chronic greater trochanteric tendinopathy (GTT) is a significant musculoskeletal condition, particularly affecting athletes involved in long-distance or repetitive high-impact activities. Characterized by lateral hip pain and functional impairments, it poses substantial challenges to athletic performance and recovery. Traditional interventions, including strengthening, stretching, and load management, often result in suboptimal success. This Critically Appraised Topic (CAT) examines the efficacy of extracorporeal shockwave therapy (ESWT) in reducing pain and improving functional outcomes in athletes with chronic GTT.

**Methods:** A systematic search of PubMed, EBSCOhost, CINAHL, and SPORTDiscus was conducted. Studies meeting inclusion criteria focused on athletes with GTT, utilized ESWT as an intervention, and reported pain reduction and functional improvement outcomes. Four high-quality studies, including three randomized controlled trials (RCTs) and one retrospective cohort study, were identified and analyzed. Evidence levels were assessed using the Oxford Center for Evidence-Based Medicine (OCEBM) and the Physiotherapy Evidence Database (PEDro) scale.

**Results:** ESWT significantly reduced pain and improved function in GTT patients, particularly when paired with therapeutic exercise. Level 2 evidence from randomized controlled trials highlighted long-term benefits, while retrospective cohort data supported its sustained efficacy. Specific improvements included reductions in visual analog scale (VAS) pain scores and enhanced lower extremity functional scale (LEFS) outcomes.

**Conclusions:** ESWT is a promising, non-invasive intervention for managing GTT. It offers significant pain relief and functional improvements, enhancing athlete care and recovery. Further research is recommended to standardize treatment protocols, validate biomarkers for tendon healing, and optimize clinical applications.

**Keywords:** hip pain, tendon rehabilitation, non-invasive therapies, therapeutic exercise, sports medicine

Vivian V. Nguyen, BS, Zania N. Sammur, BS, Eddy Bagaruka, BS, Kellen Keefer, BS, Alex Baldrige, BS, Carson L. Wright, BS, Patrick Crotty, BS, Alec Young, BS, Andrew V. Tran, BS, Alicia Ito Ford, PhD, Matt Vassar, PhD

Vivian V. Nguyen, BS, Medical Student; vivian.nguyen11@okstate.edu

### **Endorsement of Artificial Intelligence Guidelines Across Leading Nephrology Journals: A Cross-Sectional Analysis**

**Introduction/Objectives:** Artificial Intelligence (AI) is revolutionizing numerous fields, including nephrology. However, its integration raises critical concerns that may arise, such as its ethical use, transparency, and clinical implementation. Effective policy development in nephrology is important due to the prevalence of kidney disease and the lower rate of research produced in nephrology compared to other specialties. The objective of our study is to evaluate nephrology journals policies regarding the use of AI in research.

**Methods:** We reviewed the manuscript submission guidelines of the 77 highest ranked peer-reviewed nephrology journals based on the 2023 SCImago Journal Rankings. Authors extracted relevant AI related policies from the journal's Instruction for Authors. Extracted information included authorship criteria, publication policies, and the use of AI for content and image generation. Analysis included descriptive statistics using RStudio and R(version 4.2.1).

**Results:** Our search initially identified 77 journals, with 72 meeting inclusion criteria. Among these, 40 (55.6%) journals explicitly prohibited AI in their instructions for authors. AI generated manuscript writing was prohibited in 35 (48.6%) journals and AI generated images were prohibited in 16 (22.2%) journals. No nephrology journals mentioned established AI reporting guidelines.

**Conclusions:** While many nephrology journals acknowledge the growing role of AI in research, their policies remain inconsistent, with few requiring the adherence to established reporting guidelines. To promote transparent, replicable, and ethical research with the use of AI, we recommend that nephrology journals address the use of AI in their instructions for authors and adopt established guidelines to strengthen nephrology's body of literature.

**Keywords:** Artificial Intelligence, Reporting Guidelines, Nephrology, Transparency, Authorship

Hira Noon, BA, Elizabeth H. Hall, BS, Merhawit Ghebrehiwet, BS, Josh Autaubo, BS, Andrew Wilson, BS, Payton Clark, BA, BS, Joshua Brady, MD, Alicia Ito Ford, PhD, Matt Vassar, PhD

Hira Noon, BA, Medical Student; hira.noon@okstate.edu

**Full Title: Investigating Recruitment and Retention Strategies in Atopic Dermatitis Clinical Trials: A Cross-Sectional Analysis**

**Objective:** This study aims to investigate recruitment and retention strategies in Atopic Dermatitis (AD) clinical trials.

**Background:** AD is a chronic and relapsing inflammatory dermatologic condition marked by erythematous, pruritic lesions. Multiple factors like psychological stress, lifestyle factors, and socioeconomic determinants influence disease progression and treatment outcomes globally. Clinical trials evaluating AD interventions face challenges in recruitment and retention of underserved patient populations, potentially compromising the generalizability of findings to wider populations.

**Methods:** We conducted a cross-sectional analysis following PRISMA guidelines to assess recruitment and retention strategies in AD clinical trials. The relevant clinical trials were acquired in a comprehensive search of MEDLINE (PubMed) and Embase (Elsevier) on May 28, 2024. Data were extracted from trials published between January 1, 2013 and December 31, 2023. For statistical analysis, Stata 18 SE (StataCorpStataCorp LLC, College Station, TX) was used to determine the frequencies of recruitment and retention strategies.

**Results:** Of the 32 trials analyzed, only 4/32 (12.5%) integrated recruitment strategies to include underrepresented populations and only 4/32 (12.5%) had planned diversity goals to improve recruitment. Three out of the 32 (9.4%) studies reported challenges with recruitment.

**Conclusion:** Our study highlights the need for inclusive recruitment and retention strategies in AD clinical trials. The lack of diverse representation in clinical trials can contribute to obstacles in medical research and can eventually prevent advancements in treatment outcomes. It is essential to address these gaps to ensure the external validity of research findings and to improve treatment outcomes.

**Keywords:** Atopic Dermatitis (AD), Recruitment, Retention, Cross-Sectional Analysis

Cameron O'Brien, BS, Tim Smith, BS, Zohaib Thayani, BS, Andrew V. Tran, BS, Patrick Crotty, BS, Alec Young, BS, Alicia Ito Ford, PhD, Matt Vassar, PhD

Cameron O'Brien, BS, Medical Student; camobri@okstate.edu

### **Evaluating Artificial Intelligence Guidelines in the Leading Family Medicine Journals: A Cross-Sectional Study**

**Background:** Artificial intelligence (AI) is reshaping family medicine research by improving data analysis, systematic reviews, and clinical applications. However, its use also raises concerns about transparency, ethical practices, and reproducibility. This study explores how leading family medicine journals address these challenges and opportunities through their author instructions and policies.

**Methods:** A cross-sectional review was conducted on 47 peer-reviewed family medicine journals, ranked by the 2023 SCImago SJR indicator. Data was collected from each journal's "Instructions for Authors" to assess AI-related policies, such as reporting guidelines, authorship rules, and the use of AI in preparing manuscripts or generating images. Correlations between AI policies and journal characteristics were also analyzed.

**Results:** Out of the 47 journals, 44.7% mentioned AI use in their author instructions. Of these, 40.4% prohibited AI authorship, and 42.6% required authors to disclose AI involvement in submissions. While 21.3% allowed AI-generated content, only 17% permitted AI-generated images. Journals with higher impact factors were more likely to have detailed AI policies, though inconsistencies and gaps in guidance were evident.

**Conclusion:** Many family medicine journals recognize AI's role in research, but few have adopted specific reporting guidelines. This lack of standardization limits the transparency and ethical use of AI. Adopting clear and comprehensive guidelines is essential to support ethical, reproducible, and high-quality research in the age of AI.

**Keywords:** Artificial Intelligence, Reporting Guidelines, Family Medicine, Transparency, Authorship

Eli Oldham, BS, Svetlana Bobkova, MD, Jennifer Roberts, MD, Igor Shendrik, MD

Eli Oldham, BS, Medical Student; eli.oldham@okstate.edu

**Atypical Fibroxanthoma-Like Melanoma: A Rare Subtype of High-Cumulative Sun Damage Melanoma with Partial Dedifferentiation and an Aggressive Molecular Profile**

**Background:** We report a rare case of atypical fibroxanthoma (AFX)-like melanoma on the scalp of a 75-year-old man. This case illustrates the phenomenon of melanoma dedifferentiation, resulting in an AFX-like appearance.

**Case Presentation:** A biopsy of an erythematous, tender nodule on the left posterior parietal scalp revealed an ulcerated nodular lesion composed of epithelioid and spindle cells with pleomorphic nuclei arranged in a fascicular pattern. The tumor's architectural and cytologic features, including the presence of an epidermal collarette, marked anisonucleosis, and numerous atypical mitoses, closely resembled those of AFX. Immunohistochemical analysis demonstrated SOX10 positivity and negativity for other melanocytic markers. Molecular profiling confirmed the diagnosis of melanoma and identified mutations in the TERT promoter, NRAS, NF1, PBRM1, FAT1, and ATM genes. The tumor was categorized as Class 2B by the DecisionDx-Melanoma test, indicating a high risk of recurrence and metastasis. Sentinel lymph node excision revealed metastatic melanoma in 2 of the 5 examined nodes, further supporting the aggressive biological nature of this neoplasm.

**Discussion:** Various molecular mechanisms potentially underly this transformation, with mutations in NF1, PBRM1, and FAT1 likely contributing to the tumor's atypical morphology and loss of melanocytic markers. The high tumor mutational burden and aggressive molecular profile align with the reported poor prognosis of dedifferentiated melanomas. Recognizing this rare variant is critical for accurate diagnosis, effective patient management, and prognosis assessment.

**Keywords:** melanoma, atypical fibroxanthoma, metastatic, dedifferentiation, DecisionDx

Sachi Pathak, BA, Ali Vanzant, BS, Carldon Deniega, BS, Priya Chetan, BS, Radhika Pande, PhD, Shaurya Aggarwal, Fares Najar, MS, Chelsea Louvoun, MS, Subhas Das, PhD, Anil Kaul, MD, MPH, DDS, Rashmi Kaul, PhD

Sachi Pathak, BA, Medical Student; sachi.pathak@okstate.edu

### **A Gender-Based Investigation of 17 $\beta$ Hydroxysteroid Dehydrogenase 13 in HCV-Induced Cirrhosis and Hepatocellular Carcinoma**

**Introduction/Objectives:** Hepatitis C virus (HCV) infection- related inflammation, liver fibrosis and cirrhosis often lead to development of hepatocellular carcinoma (HCC). In the United States, 4.6 million people are infected with HCV. Studies show that chronic HCV infections are more prevalent in males and progress more rapidly to cirrhosis and cancer development as compared to females. In contrast, premenopausal females and women on hormone replacement therapy have been associated with less-severe disease through all stages of HCV infection. Estrogen Receptor signaling is known to regulate inflammation and immunity. We have previously identified sex-based differences in the expression of estrogen receptors (ERs) in normal livers and dysregulated mRNA and protein expression of ER subtypes in both HCV-related cirrhosis and HCC suggesting a possible role in its pathogenesis. Given the United States opioid epidemic and high rates of intravenous drug use, Hepatitis C is an emerging disease among women of child-bearing age (and subsequently, pregnant women). Therefore, HCV-positive pregnant women with high levels estrogen may also be affected by modified behavior of HSDs. As such, our studies can apply to a broad group of people and demand further investigation. Our current study investigates the hydroxysteroid dehydrogenase enzyme family (HSD). HSDs contribute largely to the synthesis and degradation of steroid hormones such as testosterone and estrogen sex-hormones, as well as cholesterol and fatty acid metabolism. They have also been shown to confer involvement in carcinogenesis of extra-hepatic cancers affecting structures such as prostate, breast, and pancreas. Estrogen Receptor signaling is known to regulate inflammation and immunity. Chronic inflammation due to HCV infection in the liver may alter HSD enzyme regulation and alter hormone metabolism. Further, this pro-inflammatory state may contribute to the development of HCC which may be modulated by altered HSDs.

**Methods/Results:** Our current study utilized proteomic analysis to determine sex-based differences in HSD protein expression in male and female HCV cirrhosis and Hepatocellular Carcinoma (HCC), with specific interest in 17  $\beta$  Hydroxysteroid Dehydrogenase 13 (HSD17B13). We studied a total 65 liver tissues that included both sexes from HCV-related cirrhosis, HCC, and normal controls. Using proteomics analysis, clinical correlates, western blotting, and immunohistochemistry techniques, our studies showed that HSD17B13 is present in both males and females and that females with HCC and females with HCV-induced cirrhosis have statistically significantly higher levels of the enzyme as compared to healthy control females and male with HCV-induced cirrhosis, respectively. Clinical marker aspartate aminotransferase (AST) shows a significant and inverse relationship to HSD17B13 expression among the HCC cohort as well. HSD17B13 protein may serve as a sex-based biomarker in liver cirrhosis and cancer development.

**Conclusion:** To the best of our knowledge this is the first report showing sex-based differences in HSD proteins in premalignant HCV-related cirrhosis. Further investigations with a larger group of patients may impress upon us new sex-based tailored clinical therapies in halting cirrhosis and HCC progression in males.

**Keywords:** Hepatitis C virus, cirrhosis, hepatocellular carcinoma, hydroxysteroid dehydrogenase, Gender



Téa Pegues, BS, D. Archer, Jennifer Volberding, PhD

Téa Pegues, BS, Graduate Student; tea.pegues@okstate.edu

### **Osseointegration's Effect on Balance and Perceived Function in Lower Leg Amputees**

Clinical Scenario: Lower extremity amputees commonly experience socket prosthesis (SP) complications that interfere with their perceived function and quality of life. Osseointegration (OI) is a new technique that requires implantation of the prosthesis directly into the intramedullary shaft of the residual limb. This alternative may be an answer for amputees who struggle with their SP and desire to regain comfortable and confident function with their prosthesis.

Clinical Question: Does OI provide better functional and balance outcomes in lower extremity amputees than socket-prosthesis users?

Summary of Findings: Participants with OI prostheses showed improvements in perceived balance and disability. There was little to no improvement in spatiotemporal measures during the 10-meter walk tests. However, all studies showed clinically important differences in ABC scores ( $d=-1.36$   $p=0.01$ )<sup>10</sup> and 8.86 point improvement (MCID= 5.36)<sup>9</sup>.

Clinical Bottom Line: Patients with lower extremity amputations may explore the option of OI as an alternative to SP. The outcomes measured show that OI produces the same functional ability as those with an SP, however it provides an increase in perceived balance and function which may positively affect their quality of life. OI does have its risks, but depending on the patient those risks may still be an improvement from the difficulties experienced with their SP.

Strength of Recommendation: Consistent CEBM Level 3 findings support OI is an appropriate alternative to SP in providing increase perceived balance and function in lower extremity amputees.

Keywords: Gait, Prosthesis, Confidence, Disability, Socket-Prosthesis, Bone- Anchoring

Malachi Penland, **Lydia Hashemi, BS**, Tag Harris, BS, Jeanie Marchbanks, BS, Alex Hagood, BSN, Andrew V. Tran, BS, Patrick Crotty, BS, Alec Young, BS, Alicia Ito Ford, PhD, Matt Vassar, PhD

Malachi Penland, Medical Student; malachipenland296@gmail.com

### **Adoption of Artificial Intelligence Guidelines in Anesthesia Journals: A Cross-Sectional Analysis**

**Introduction/Objectives:** Artificial intelligence (AI) is revolutionizing research in Anesthesia and Pain Medicine by improving data analysis, systematic reviews, and clinical applications. However, its adoption brings up concerns about transparency, ethical considerations, and reproducibility. This study examines how top Anesthesia and Pain Medicine journals tackle these issues and opportunities through their author guidelines and policies.

**Methods:** A cross-sectional review was conducted of the top 100 peer-reviewed Anesthesia and Pain Medicine journals, ranked according to the 2023 SCImago SJR indicator. Data were extracted from the "Instructions for Authors" sections of each journal to assess AI-related policies, including reporting guidelines specific to AI, criteria for authorship, and the incorporation of AI in manuscript preparation and image generation. Correlational analyses were then performed to examine the relationship between these AI policies and the characteristics of the journals.

**Results:** Of the 100 journals evaluated, 63% addressed AI use in their instructions, with most prohibiting AI authorship while requiring disclosure of AI involvement in submissions. AI-generated content was allowed by 31% of journals, while 29% approved of AI-generated images. Journals with higher impact factors were more likely to include detailed AI policies, but significant gaps in standardization and guidance remain.

**Conclusion:** Although many Anesthesia and Pain Medicine journals acknowledge the role of AI in research, only a few support AI-specific reporting guidelines, which hampers the standardization and transparency of AI usage. We advocate for implementing comprehensive guidelines to promote ethical, reproducible, and high-quality research in the age of AI-driven innovation.

**Keywords:** Artificial Intelligence, Reporting Guidelines, Anesthesia and Pain Medicine, Transparency, Authorship

Tristen Peterson, BS, Marissa Holloway, BS, Matthew O'Brien, PhD, LAT, ATC, PES, CES

Tristen Peterson, BS, Graduate Student; tristen.g.peterson@okstate.edu

**Will The Use of Internal Bracing for UCL Repair Provide a Shorter Timeline of Return to Play for Overhead Athletes: A Critically Appraised Topic**

Clinical Scenario: Ulnar collateral ligament (UCL) injuries are becoming more prominent within the population of overhead athletes. Traditional procedures to repair the UCL have a long timeline, 12-14 months, to return to play (RTP), however the use of internal bracing provides a faster timeline for overhead athletes to RTP.

Clinical Question: Does the use of internal bracing provide a faster recovery timeline for overhead athletes with UCL injury?

Summary of Key Findings: A computerized search was performed to find the relationship with internal bracing for UCL repair in overhead athletes and RTP timelines. Two articles were found in the search and one hand picked that included in this appraisal.

Clinical Bottom Line: Evidence suggests that overhead athletes that are suitable for UCL repair should use internal bracing as their source of repair compared to traditional reconstruction and repair. This is because it provides a shorter RTP timeline with a higher percentage of RTP at the same level of play or greater pre-injury.

Strength of Recommendation: Based on the Strength of Recommendation Taxonomy Scale, there is level C evidence to support the use of internal bracing for UCL repair for overhead athletes to have a faster return to play timeline.

Keywords: Overhead athletes, Internal Bracing, UCL repair, Return to play

Michelle Pham, BS, Eddy Bagaruka, BS, Eli Oldham, BS, Mahad Chaudhry, BS, Jacob Duncan, BA, Taylor Gardner, BS, Annes Elfar, BS, Eli Paul, BS, Alicia Ito Ford, PhD, Matt Vassar, PhD

Michelle Pham, BS, Medical Student; michpha@okstate.edu

### **The State of Data Sharing in Rheumatology: A Systematic Review of Top Journal Practices**

**Background:** Insufficient reproducibility in scientific research undermines credibility and progress, particularly in medical fields. Reproducibility requires raw data availability, which is not always provided. The data sharing landscape in rheumatology research has yet to be adequately assessed, leading us to initiate this study. This study aims to evaluate the prevalence of data sharing statements (DSS) in rheumatology clinical studies published over the past four years in ten of the top rheumatology journals.

**Methods:** We conducted a systematic review of articles published from January 1, 2020, to December 31, 2023, in ten of the highest-impact rheumatology journals. Articles were included if they provided new primary data through original research, and articles were excluded if there was no new primary data found. Prevalence, defined as the proportion of studies including DSS, was the primary estimate.

**Results:** A total of 1,154 articles were identified, of which 41 were excluded for failing to meet inclusion criteria, leaving 1,113 for analysis. Among these, *Rheumatology* was the most represented journal (286; 25.70%), and clinical trials were the most common study design (591; 53.10%). The highest number of publications occurred in 2020 (314; 28.21%). Overall, 623 (55.97%) had DSS. Six of the eight top rheumatology journals showed an overall increase in DSS prevalence from 2020 to 2023, with *Rheumatology* reaching 100% in 2023. Hierarchical logistic regression analysis indicated that cohort studies were significantly less likely to include DSS than clinical trials ( $p = 0.013$ ). Our theme analysis of the 623 articles with DSS revealed that most data were conditionally available (553; 88.75%) or required making a data request (479; 76.89%).

**Conclusions:** Our study describes data sharing practices in rheumatology research, highlighting trends in DSS prevalence and the influence of journal policies requiring DSS statements. While organisations like the American College of Rheumatology and National Institute of Health have promoted these practices, inconsistencies remain. We recommend implementing a standardised DSS requirement during author submission to enhance data transparency in rheumatology research.

**Keywords:** data sharing, rheumatology, systematic review

Bhuvanesh Kumar Raju, MS, Vikramsingh Gujar, PhD

Bhuvanesh Kumar Raju, MS, Graduate Student; braju@okstate.edu

### **Exploring Differential Gene Expression in Nasal-Mucus Derived small Extracellular Vesicles: Potential Biomarker for Respiratory Health**

**Introduction:** Respiratory diseases, like chronic rhinosinusitis, allergic rhinitis, and asthma, pose global health concerns, affecting over 500 million people and significantly contributing to the healthcare burden. Traditional diagnostic methods often lack sensitivity and specificity, necessitating the development of novel biomarkers for early and accurate detection of specific disease conditions. Small extracellular vesicles (sEVs), nano-sized vesicles released by cells, have gained attention as carriers of molecular biomarkers due to their role in cell communication and their presence in various biological fluids. This study aims to identify respiratory-specific biomarkers within sEVs derived from nasal mucus, offering a non-invasive approach to diagnosing respiratory conditions.

**Methods:** We received deidentified nasal mucus and serum samples from healthy individuals and extracted the sEVs using precipitation and size exclusion-based techniques. The sEVs were characterized using dynamic light scattering (DLS), nanoparticle tracking analysis (NTA), and western blotting. We subsequently employed RNA sequencing to identify potential biomarkers within these vesicles. In addition, we performed single-cell RNA sequencing for nasal tissue to achieve a high-resolution view of cellular heterogeneity and to compare cell-type-specific biomarkers. We processed the sequencing data using bioinformatic tools including alignment, normalization and differential gene expressions to identify potential respiratory biomarkers from these health individual samples.

**Results:** Our analysis showed a higher level of specific mRNA transcripts, associated with inflammation, cellular stress response, and membrane integrity, which are crucial for respiratory diseases in nasal sEVs compared to serum sEVs. The findings suggest that sEVs from nasal mucus are a rich source of respiratory-specific biomarkers, which could be utilized to diagnose and monitor inflammation and olfactory dysfunction in respiratory conditions.

**Conclusion:** These sEV based biomarkers offer a promising avenue for developing non-invasive diagnostic tools that could improve patient outcomes by enabling earlier and more accurate detection of respiratory diseases. Future research should focus on validating these biomarkers in larger, disease-specific cohorts.

**Keywords -** Respiratory diseases, Nasal mucus, Small extracellular vesicles (sEVs), Biomarkers, Inflammation, Olfactory dysfunction

Jack Rea, BS, **Adam Khan, BA**, Nicholas Boyne, BS, Alison Duke, BS, Matt Vassar, PhD

Adam Khan, BA, Medical Student; adam.khan@okstate.edu

### Discrepancies in Adverse Event Reporting for Ketamine Trials: An Observational Study from ClinicalTrials.gov and Publications

**Background:** Ketamine is a dissociative anesthetic widely used in anesthesia, emergency medicine, and psychiatry, for its rapid onset and analgesic properties, along with the preservation of airway reflexes. However, it carries risks, including cardiovascular issues, neurocognitive effects, and potential for misuse, particularly as its off-label applications expand. Given these risks, comprehensive and transparent reporting of adverse events (AEs) is crucial for assessing ketamine's full risk-benefit profile. This study examines the consistency of AE reporting between ClinicalTrials.gov and corresponding peer-reviewed publications.

**Methods:** This retrospective study analyzed ketamine randomized clinical trials (RCTs) from 2009 to 2023. The starting year, 2009, marks the implementation of the Food and Drug Administration Amendments Act (FDAAA) 801, mandating comprehensive AE reporting for registered clinical trials. Data regarding serious adverse events (SAEs), other adverse events (OAEs), patient discontinuations, and deaths were extracted from ClinicalTrials.gov and compared to corresponding publications to identify discrepancies. Trials were independently screened, and data were extracted by two reviewers, with inconsistencies categorized based on the completeness, number, and description of adverse events across both sources.

**Results:** Among 39 published trials, discrepancies in AE reporting were present in 89.7% of cases, with only 10.3% fully aligning with ClinicalTrials.gov data. Notable inconsistencies were in reporting patient discontinuations and SAEs, with many publications omitting or underreporting these events compared to the registry data. Deaths were also inconsistently reported, with only 33.3% of publications reflecting deaths documented on ClinicalTrials.gov.

**Conclusion:** Discrepancies in safety data reporting for ketamine between trial registries and publications underscore the need for stricter adherence to guidelines like the CONSORT Harms Extension. Accurate AE reporting is essential for guiding clinical decisions and improving patient outcomes, especially as ketamine's off-label therapeutic use grows. This study emphasizes the importance of transparency in reporting to enhance ketamine's safety profile and support evidence-based practices.

**Keywords:** Ketamine, Randomized Clinical Trials, Adverse events, ClinicalTrials.gov, Safety

Madison Reese, BS, Blakelee Eggleston, BPH, **Alexandra Smith, BS**, Austin Young, BS, Anna Mazur, PhD, ABN, ABPP-CN, Micah Hartwell, PhD

Madison Reese, BS, Medical Student; madison.reese@okstate.edu

### **Research Gaps in the Correlation of Anxiety and Depression Prevalence in Former College Athletes: A Scoping Review**

**Background:** Collegiate sports participation is integral to culture and identity. Transitioning from athletics to regular life often leads to significant mental health concerns. Abrupt lifestyle and identity changes can result in dietary, career, and health consequences that impact athletes' mental well-being. While some data addresses this transition, research focused on developing best practices to support athletes during this period remains limited. This study aims to conduct a scoping review to identify existing research and gaps concerning described supports in mental health, particularly depression and anxiety, in retired athletes.

**Methods:** A scoping review was conducted following SCOPING review guidelines. We analyzed original research, literature reviews, systematic reviews, meta-analyses, clinical trials, and case studies. Articles were sourced from PubMed (MEDLINE), Embase, and the Cochrane Library.

**Results:** A total of 169 articles were identified, with 61 selected for full-text screening and 9 included in the study. These comprised 4 cross-sectional studies analyzing survey data, 4 systematic or scoping reviews, and 1 qualitative analysis. While all articles addressed depression or anxiety, most focused on individuals returning to exercise post-injury and quality of life.

**Conclusion:** Current research highlights the needs of collegiate, professional, and retired athletes. Limited literature exists on former collegiate athletes, with available studies emphasizing university programs to ease transitions and help athletes apply their skills in retirement. Research gaps include examining programs across divisions and sports, minimizing self-reporting surveys, and conducting longitudinal studies. Future efforts should focus on addressing these gaps to better support athletes transitioning to life beyond sports.

**Keywords:** anxiety, depression, former college athletes, athletic identity, scoping review, self-reporting bias, educational programs, longitudinal studies

Madison Reese, BS, Mallory Nelson, BS, Micah Hartwell, PhD

Madison Reese, BS, Medical Student; madison.reese@okstate.edu

### **Examination of Sports-Related Knee Injury Interventions from Current Clinical Trials**

**Background:** Every clinical trial has to be registered at ClinicalTrials.gov, which has enabled evaluations of current and discontinued clinical trials in all areas of expertise. Knee injuries are common in all levels of sport and it is becoming increasingly more important to prevent these at a younger age so they do not affect the person later in life. The purpose of this study was to create a summary of the knee injury interventional clinical trial portfolio.

**Methods:** All interventional trials registered at ClinicalTrials.gov from October 2021 until now (January 2025) were included. Intervention type, enrollment population, trial phase, location, and injury type were described.

**Results:** During this time there were 161 interventional knee injury trials active or completed. The most common intervention type was “Other” (24.2%) which included rehabilitation exercises and new diagnostic tests followed by procedures (23.0%). The majority of trials were adult only enrollment compared to only 3 that were pediatric enrollment only. An overwhelming majority did not provide a current phase, however of those that did, the most common was Phase IV. North America (42.1%) was home to the majority of clinical trials followed by Europe (27.0%) and Asia (20.1%). Over half of the clinical trials focused on ACL injuries (55.6%), with osteoarthritis (5.7%) and meniscus injuries (4.4%) as the next most common injury type.

**Conclusion:** Analysis of the ClinicalTrials.gov data permits summarization of the current scope of interventional knee injury trials. This data can be useful to decide how to proceed regarding treatment and prevention of knee injuries. They can also provide insight to the advancement of interventional clinical trial set up and execution regarding knee injuries.

**Keywords:** clinical trials, knee injuries, interventional



Allie Rice, BA, Madison Taylor, BS, Amy Hendrix-Dicken, MA, Covenant Elenwo, MPH, Julie Croff, PhD, Laura J. Chalmers, MD, Sara Coffey, DO, Micah Hartwell, PhD

Allie Rice, BA, Medical Student; allie.rice@okstate.edu

### **Adverse Childhood Experiences and Age of Diabetes Diagnosis: Examination of the 2021 BRFSS**

**Background:** Previous research has linked the manifestation of multiple chronic diseases that are frequently due to health behaviors to adverse childhood experiences (ACEs). Despite this, the link between ACEs and the age of diabetes mellitus (DM) diagnosis is scarce. As such, our primary objective was to evaluate and describe the impact of ACEs on the age at diagnosis utilizing the data from the 2021 Behavioral Risk Factor Surveillance System (BRFSS). Our secondary objective was to analyze the relationship between various demographic factors and the Type II DM diagnosis age.

**Methods:** We conducted a cross-sectional analysis of data from the 2021 cycle of BRFSS. Applying sampling weights, provided by BRFSS, we assessed prevalence rates of ACEs across sociodemographic variables and utilized binary and multivariable regressions to determine associations between sociodemographic factors and ACE scores on age of Type II DM diagnosis.

**Results:** Among the 437,708 respondents, 57,616 (12.59%) individuals reported having diabetes with 6,901 including responses for age of DM diagnosis and ACEs. We found a dose-response relationship between ACEs and earlier age of diabetes diagnosis—with individuals experiencing 1-3 ACEs being diagnosed 2.15 years earlier ( $SE=0.48$ ,  $P<.001$ ) than those with 0 ACEs, and 6.37 years earlier for individuals experiencing 4+ ACEs ( $SE=0.61$ ,  $P<.001$ ). Significant differences in ACEs and age of diagnosis were also found between ethnoracial groups—compared to White, non-Hispanic individuals with 0 ACEs the mean age of diagnosis was more than 12 years earlier among those who experienced 4+ ACEs and were either Asian, American Indian/Alaskan Native, or Hispanic.

**Conclusion:** Our study showed that diagnosis of Type II DM among adults who experienced childhood adversity occurred at a much earlier age than those without ACEs. While early diagnosis is critical in long-term DM management, appropriate identification of childhood adversity may be a key component to the development of the disease. This may be achieved through comprehensive child and family resources that target mental health and behavioral factors already known to be associated with DM.

**Keywords:** Diabetes, Preventative medicine, Adverse childhood experiences

Jill Richardson, MAT, **Jaclyn Arduini, MS**

Jaclyn Arduini, MS, Graduate Student; jaclyn.arduini@okstate.edu

### **Lateral Ankle Sprain with Cuboid Syndrome in a Secondary School Student-Athlete**

**Background:** Lateral ankle sprains (LAS) are one of the most common injuries in secondary school student-athletes. Cuboid syndrome (CS), a mild alteration to the arthrokinematics or congruency of the cuboid sometimes caused by improper or ill-fitting footwear, may be overlooked due to its similarities to LAS. Many secondary school student-athletes do not wear proper footwear for their foot size or type and may often be a secondary cause of CS after an inversion mechanism. Additionally, weakness or overuse of peroneus longus muscle is also thought to play a role in CS due to its insertion.

**Case Presentation:** The patient is a white 18-year-old male basketball student-athlete with a history of LAS. During practice he landed on another player's foot, resulting in pain, tenderness and swelling over the lateral right talocrural joint that extended to the cuboid and midfoot. He reported hearing and feeling a pop at the time of injury. X-rays and orthopedic tests were performed, and results indicated a Grade II LAS. The patient continued to present with lateral midfoot tenderness, restricted dorsiflexion, and discomfort during the push-off phase of gait. Localized swelling was noted surrounding the cuboid. Due to this prolonged discomfort, further special tests were performed. The dorsal-plantar cuboid shear test was positive, and produced an audible cavitation with immediate pain reduction. After the test, the patient was then able to walk without antalgic gait. While pain returned occasionally, joint mobilizations were performed and rehabilitation emphasized peroneal strengthening in addition to various other strength and agility work. The patient was able to return to play within 20 days.

**Conclusions:** Additional orthopedic testing is useful in LAS to rule out CS if pain persists and is located below the talocrural joint or within the midfoot. Strengthening the peroneal muscles is crucial for adolescent patients because of the footwear they typically select. Such footwear frequently limits natural body movements, which can lead to muscle weakness and imbalances within the lower leg. The restrictions imposed by these shoes can have long-term consequences on the ankle and foot, especially following an injury.

**Keywords:** cuboid syndrome, lateral ankle, footwear

McKenna Riggs, BS, Grayson Brant, BS, Trevon Jelinek, BS, Matt Vassar, PhD

McKenna Riggs, BS, Medical Student; mckenna.riggs@okstate.edu

## **An Investigation into the Intraoperative Management of the Difficult Pediatric Airway: A Scoping Review**

**Introduction/Objectives:** Pediatric airways can pose a significant challenge to anesthesia providers. Almost 20% of pediatric patients undergoing general anesthesia are considered to have a difficult airway due to congenital anomalies, craniofacial deformities, trauma, or infection. The majority of children with difficult airways can be identified preoperatively, but the variety of clinical scenarios in which difficult airways can quickly arise requires an individualized approach that considers the underlying condition and the patient's physiological status. The objective of this scoping review is to identify clinical challenges and complications, summarize outcomes of airway methods, and identify existing knowledge gaps to guide future airway management research.

**Methods:** We performed a literature search using the Ovid (Embase), MEDLINE (PubMed), SCOPUS, Web of Science, and Cochrane databases for articles on pediatric airways that were published in the 10-year period spanning from 2014 to 2024 and written in English. Included studies were systematic reviews, meta-analyses, retrospective database reviews, clinical trials, case-control studies, cross-sectional analyses, and cohort studies. The data was imported into Rayaan, and two independent investigators screened records for inclusion criteria in a masked, duplicate fashion. Investigators then completed a data extraction form that identified the frequencies, types, and complications of airway methods used to provide anesthetic care.

**Results:** The initial database search yielded 1,097 articles, and 82 ultimately met the inclusion criteria to be evaluated in our study. The sample in our study consisted of research from 50 different journals. The most frequent journal featured in our sample was *Cureus: Journal of Medical Sciences*, with 11 studies (11/82; 13.4%). The continent with the most studies was Asia, with 43 studies (43/82; 52.4%). Case reports/Case series comprised most of the study design types (62/82; 75.6%), followed by Cohort studies (15/82; 18.3%). There was only one of each, a Randomized Controlled Trial and systematic review with meta-analysis. The studies focused on anatomical/congenital difficult airways most commonly (42/82; 51.2%). The approach/technique included in these studies was most commonly direct laryngoscopy (36/82; 43.9%), fiberoptic bronchoscopy (37/82; 45.1%), and video laryngoscopy (39/82; 47.6%).

**Conclusion:** In conclusion, the importance of a proper preoperative examination to identify anatomical, pathological, or physiological characteristics of pediatric patients cannot be emphasized enough. This scoping review provides an overview of the current techniques and methods of intraoperative pediatric difficult airway management and identifies the knowledge gaps and areas for future research. More systematic research, like randomized controlled trials and systematic reviews, could benefit the anesthetic community with different approaches to handling these critical situations.

**Keywords:** airway, pediatrics, difficult airway, anesthesia

Madeline Rowe, BS, **Nevada Denton, BS**, Chris Tran, BS, Ahmed Elghzali, BS, Chance Bratten, BS, Patrick Crotty, BS, Andrew V. Tran, BS, Alec Young, BS, Alicia Ito Ford, PhD, Matt Vassar, PhD

Madeline Rowe, BS, Medical Student; madeline.rowe@okstate.edu

### **Endorsement of Artificial Intelligence Guidelines Across Leading Immunology Journals: A Cross-Sectional Analysis**

**Background:** Artificial intelligence (AI) is revolutionizing immunology research, advancing data analysis, systematic reviews, and clinical applications. Yet, its integration presents challenges related to transparency, ethical considerations, and reproducibility. This study investigates how top immunology journals respond to these issues and opportunities through their author guidelines and policies.

**Methods:** The top 100 immunology journals, ranked by the 2023 SCImago SJR indicator, were reviewed in a cross-sectional study. Data from each journal's 'Instructions for Authors' were analyzed to evaluate policies related to AI, such as reporting guidelines, authorship criteria, and the use of AI in preparing manuscripts and generating images. To explore connections between these policies and journal characteristics, correlational analyses were conducted.

**Results:** Of the 100 journals evaluated, 66% addressed AI use in their instructions, with most prohibiting AI authorship while requiring disclosure of AI involvement in submissions. AI-generated content was allowed by 29 % of journals, while 18 % approved of AI-generated images. Journals with higher impact factors were more likely to include detailed AI policies, but significant gaps in standardization and guidance remain.

**Conclusion:** Although many immunology journals acknowledge the growing role of AI in research, few have adopted AI-specific reporting guidelines, which hinders standardization and transparency. To address this, we recommend implementing comprehensive guidelines to promote ethical, reproducible, and high-quality research in the age of AI-driven advancements.

**Keywords:** Artificial Intelligence, Reporting Guidelines, immunology and allergy, Transparency, Authorship

Kaylyn Rowsey, BS, Adam Khan, BA, Jillian Brassfield, BS, Matthew Rashid, BS, Jacob Duncan, BA, Matt Vassar, PhD

Kaylyn Rowsey, BS, Medical Student; kaylyn.rowsey@okstate.edu

### **Lowering Pain & Inflammation Drug Costs: Evaluating the Impact of the Mark Cuban Cost Plus Drug Company Model on Medicare Savings**

**Background:** Pain and inflammation are among the most prevalent and debilitating conditions affecting Medicare beneficiaries, with 78% reporting chronic pain and nearly half relying on medications like NSAIDs, acetaminophen, and anticonvulsants for management. These conditions necessitate long-term pharmaceutical interventions, contributing significantly to the rising costs within Medicare Part D, which covers prescription drugs for over 80% of beneficiaries. Current pricing structures and the inability to negotiate prices exacerbate the financial strain on this demographic, leading to high out-of-pocket expenses and reduced medication adherence. This study examines the potential of the Mark Cuban Cost Plus Drug Company (MCCPDC) pricing model to address these challenges by providing affordable alternatives for pain and inflammation medications.

**Methods:** A cross-sectional analysis was conducted comparing 2022 Medicare Part D spending data with 2024 MCCPDC prices for 25 generic medications in their 'Pain & Inflammation' category. Cost comparisons were performed for 30 count and 90 count prescriptions, incorporating shipping fees. Data analysis employed volume-adjusted calculations to estimate Medicare cost savings.

**Results:** The analysis indicated potential annual Medicare cost savings of \$334 million if MCCPDC pricing were adopted. Savings for 30 count prescriptions averaged 10.4%, with 76% of analyzed drugs yielding cost savings. For 90 count prescriptions, 96% demonstrated savings. Celecoxib, widely used for arthritis and chronic pain, showed the highest cost savings potential at \$134 million. Naproxen Sodium ER also demonstrated significant savings, with an estimated reduction of \$33 million in costs compared to Medicare's rates. These findings highlight the potential for substantial cost savings by addressing inefficiencies in Medicare Part D's current pricing models for high-utilization drugs.

**Conclusion:** Integrating MCCPDC's transparent pricing model into Medicare Part D could substantially reduce costs, improve medication adherence, and alleviate the financial burden on beneficiaries managing chronic pain and inflammation. Physicians play a critical role in this process by informing their patients about alternative pricing models, such as those offered by MCCPDC, to help them access affordable medications. Implementing such a model could serve as a cornerstone for broader healthcare reforms aimed at enhancing affordability in the U.S. healthcare system.

**Keywords:** Medicare Part D, pain management, inflammation, drug pricing, healthcare policy

Dave Ryan, BS, **Allison Long, BS**, Lauren Streeter, BA, David Ryan, B.S, Dusti Sloan, PhD

Allison Long, BS, Medical Student; allison.long@okstate.edu

### **Exploratory Analysis of Estrogen-Mediated Gene Expression of Relaxin in the Hypothalamus**

Introduction: Women are eight times more likely to sustain ACL injuries than men, often attributed to hormonal fluctuations. Estrogen and relaxin, a hormone influencing ligament laxity, may contribute to this disparity. Relaxin's role in altering collagen properties suggests a potential link between

estrogen-regulated relaxin expression and increased injury susceptibility, particularly during the menstrual cycle's follicular phase.

Objective: This study investigates estrogen's role in modulating relaxin and its receptors (RXFP-1 and RXFP-3) in the hypothalamic arcuate nucleus (ARC) and paraventricular nucleus (PVN). We aim to explore whether high estrogen phases of the menstrual cycle correlate with increased relaxin expression, potentially explaining heightened ligament injury risk in females.

Methods: Adult female Sprague-Dawley rats (n=6) underwent bilateral ovariectomy, followed by a seven-day recovery. Rats were injected with estrogen (10 µg, n=3) or oil vehicle (n=3) for three days and terminated on day four. Brain punches from ARC and PVN underwent RNA extraction and microarray analysis (Rat Clariom S Assay). Data were analyzed using Transcriptome Analysis Console (TAC) Software 4.0.

Results: Preliminary findings indicate that estrogen increases relaxin signaling. RXFP-1 expression in the ARC of estrogen-treated rats showed a five-fold increase compared to controls. While relaxin expression in the ARC doubled under estrogen treatment, the difference was not statistically significant. In the PVN, relaxin receptor RXFP-3 expression was two-fold higher in estrogen-treated rats (p=0.07). These results suggest a potential role for estrogen in relaxin-mediated ligament laxity, particularly during the late follicular or ovulatory phase.

Discussion: Our findings indicate that estrogen enhances relaxin secretion and receptor expression in the hypothalamus, contributing to ligament laxity. These insights may explain the increased susceptibility of female athletes to ligament injuries during high-estrogen phases of the menstrual cycle. However, the small sample size limits definitive conclusions.

Conclusion: This exploratory study demonstrates a potential link between estrogen levels and relaxin-mediated effects on ligament integrity. Future research should include larger sample sizes and investigate the systemic roles of relaxin receptors to establish robust connections between estrogen, relaxin, and injury risk.

Keywords: Relaxin, Estrogen, Ligament Injury

David Ryan, BS, Andrew Batista, MSAT, Noah Barks, BS, Tristian Galbreath, BS, Matthew Lowrie, BS, Chrisitan Siegle, BS, Dusti Sloan, PhD

David Ryan, BS, Medical Student; david.ryan@okstate.edu

### **The Prevalence of Analgesic Medications Used By Baseball Players At Professional And Amateur Levels**

Introduction: Bouts of throwing arm pain and injury are a common occurrence among professional and amateur baseball athletes. Many modalities to treat these are available and are widely used, including; physical therapy, manipulative medicine, non-medicinal and non-invasive anti-inflammatory measures, surgical, rest protocols, and analgesic medications. This study aims to determine the prevalence of analgesics used by baseball players for throwing arm specific pain and correlations that could suggest reasons for why these athletes use these medications.

Methods: This is a survey study designed to obtain information about an individual athlete about the number of years played, analgesic use, arm pain, injuries, procedures and surgical procedures on their throwing arm. This study included anyone who had played baseball for at least five years, played at the high school level or higher & was  $\geq 18$  years old at the time of completing the survey.

Results: The results showed that of the 161 respondents 78.26% (n=126) used analgesics with 72.04% reported arm pain and/or injury and 7.93% (n=10) used medications without reporting any pain and/or injury to their throwing arm. Of the players who took medication, 33.3% (n=42) reported having one or more procedures or surgeries on their throwing arm while 11.42% (n=4) of the athletes who did not use pain medications reported having one or more procedures or surgeries on their throwing arm.

Conclusion: These results suggest that analgesic treatment among the different levels of baseball athletics have a significantly high usage of analgesic medication that could be correlated to arm pain, injuries, past surgical procedures or other invasive modalities. A larger sample size is needed to determine a more correct prevalence rate among these athletes and a deeper look into when they started using these medications and for what reason(s).

Keywords: Analgesics, Arm pain, Survey study

Dacie Sanders, BS, Claire Bridgewater, BS, Chandler Church, BS, **Aric Warren, PhD**

Dacie Sanders, BS, Graduate Student; dacie.sanders@okstate.edu

**The Effectiveness of Vestibular Rehabilitation Therapy in Decreasing Concussion Symptoms in Patients Under the Age of 60: A Critically Appraised Topic**

Clinical Scenario: Concussions, also known as mild traumatic brain injuries or traumatic brain injuries, are prevalent injuries sustained by both young and old. These injuries can leave people with lasting symptoms. Vestibular Rehabilitation Therapy (VRT) is a form of physical therapy which is comprised of exercises encouraging head and eye movements.

Clinical Question: In patients ages twelve to sixty who have sustained a diagnosed concussion and have experienced symptoms for up to one year, does completing vestibular rehabilitation therapy efficiently return them to activities of daily living through symptom resolution sooner than conservative methods?

Clinical Bottom Line: There is moderate evidence supporting the integration of VRT to concussion protocols in order to achieve efficient symptom resolution as soon as two weeks to return patients with diagnosed concussions to their activities of daily living.

Strength of Recommendation: These findings suggest the Strength of Recommendation Taxonomy (SORT) Level B evidence<sup>12</sup> with a CEBM level 2 indicating the quality methods used by the included studies.

Keywords: concussions, Vestibular Rehabilitation Therapy, symptoms



Allison Sherier, PhD

Allison Sherier, PhD, Postdoctoral Fellow; allie.sherier@okstate.edu

### **Applications of machine learning and large language models in phenotype predictions in rare genetic pediatric disorders**

Rare genetic pediatric diseases present a significant challenge in medical research and care due to their complexity, heterogeneity, and limited datasets. Early identification and prediction of phenotypes across a patient's lifetime are crucial for improving outcomes and guiding clinical interventions. Recent advancements in machine learning (ML) and artificial intelligence (AI) offer transformative potential in addressing challenges in predicting patient outcomes and the severity of phenotypes. Leveraging ML and AI to enhance the understanding and prediction of phenotypic manifestations in rare pediatric genetic syndromes is an ideal research space for precision medicine. By integrating diverse data sources, including genomic, epigenomic, proteomic, and clinical records, ML models can identify patterns and correlations that are not apparent through traditional analysis. These insights can inform more precise diagnostic criteria, predict disease progression, and tailor patient-specific treatment plans.

A key focus for precision medicine in rare pediatric disease cases is developing a large language model (LLM) specifically trained on rare pediatric genetic condition data. An LLM can synthesize vast amounts of multidisciplinary biomedical literature, patient records, and genetic databases to predict phenotypic trajectories. The LLM framework employs deep learning techniques to incorporate temporal data, enabling dynamic phenotype prediction across distinct life stages. Additionally, these models facilitate the identification of shared phenotypic features among disorders with overlapping genetic etiologies, standardizing disease characterization and guiding research on targeted therapies. Crucially, this framework also extends to patients with previously unreported mutations. By leveraging similarities in genetic and phenotypic patterns across known cases, LLMs can infer likely manifestations for novel mutations. This approach enables clinicians to anticipate phenotypes even in the absence of prior clinical data, providing critical insights for diagnosis and management in rare and newly characterized syndromes. By addressing the challenges of incomplete data and expanding the boundaries of phenotype prediction to include unreported mutations, this framework establishes a foundation for deploying advanced ML and AI methodologies, accelerating the pace of discovery and improving the quality of life for children with rare genetic diseases.

Keywords: genetics, precision medicine, machine learning

Ryan Sherry, BS, Taylor Gardner, BS, Ethan Wood, BA

Ryan Sherry, BS, Medical Student; ryan.j.sherry@okstate.edu

### **Race in Dermatology Clinical Guidelines: A Systematic Review of Impacts on Health Equity**

**Introduction:** Clinical practice guidelines (CPGs) synthesize evidence to guide dermatologic care and improve outcomes. However, the use of race in CPGs has the potential to perpetuate or mitigate health inequities. Race is a sociopolitical construct rather than a biological determinant of health, and its misuse in clinical recommendations may reinforce structural inequities. This study systematically reviews the use of race in dermatology CPGs to assess its impact on health care equity and identify opportunities for improvement.

**Methods:** This study included dermatology CPGs published between January 1, 2019, and April 30, 2024, providing guidelines for patients aged 18 years or older in the United States. CPGs not published in English, irrelevant to dermatology, or aimed at populations outside the United States were excluded. A comprehensive search was conducted, and identified CPGs were organized into Rayyan or a Google Sheet. Duplicate records were removed. Two authors independently screened all CPGs for eligibility in a masked, duplicate manner. Discrepancies were resolved through discussion, with a third-party reviewer mediating unresolved disagreements.

**Results (*Expected*):** Preliminary analysis anticipates dermatology CPGs utilizing race in their recommendations or background. It is expected that a proportion of these will use race in a manner that could negatively affect health care equity, such as conflating race with biological risk factors or perpetuating stereotypes. Conversely, a proportion is expected to use race positively by addressing health disparities or promoting inclusivity. Final results will be compiled, analyzed and finalized by January 20, 2025, in preparation for the symposium.

**Conclusions:** This study anticipates highlighting critical opportunities for improving the use of race in dermatology CPGs to enhance health equity. The findings are expected to inform recommendations for national medical organizations to develop guidelines that address systemic inequities and promote equitable dermatologic care. A finalized conclusion will be presented at the symposium upon completion of the analysis.

**Keywords:** Race, Dermatology, Clinical Practice Guidelines, Health Equity, Systematic Review

Ryan Sherry, BS, **Peter Lang, BS**

Ryan Sherry, BS, Medical Student; ryan.j.sherry@okstate.edu

### **Bridging the Gap: Improving Data Sharing Practices in Surgical Research**

**Background:** Data sharing is critical for advancing medical knowledge, improving patient outcomes, and ensuring research transparency and reproducibility. Despite the International Committee of Medical Journal Editors (ICMJE) guidelines mandating data-sharing statements (DSS) in clinical trials, compliance in surgical research remains inconsistent.

**Methods:** Following PRISMA guidelines, a systematic review, and cross-sectional analysis were conducted on 1,094 articles from the top five h-5 indexed surgery journals published between January 1, 2020, and December 31, 2023. Factors influencing DSS inclusion were assessed using hierarchical logistic regression, and thematic analysis was performed on DSS content. A comprehensive search was conducted in MEDLINE (PubMed) using ISSNs of the selected journals, and articles were screened for eligibility based on predefined criteria.

**Results:** Out of 1,094 articles, only 141 (12.89%) included DSS, with higher rates in clinical trials (18.05%) compared to cohort studies (5.20%). Government and industry-funded studies were more likely to include DSS. Open-access articles had higher DSS rates (18.95%) than non-open-access articles (4.72%). Hierarchical logistic regression indicated significant variability among journals, with higher impact factor journals more likely to include DSS. Thematic analysis revealed prevalent themes of gatekeeper roles, conditional data availability, and privacy concerns. Of the 96 corresponding authors contacted, 18 were willing to share data.

**Conclusion:** Despite slight improvements, data sharing in top surgery journals remains low, particularly in journals with higher impact factors and funded studies. Implementing robust policies and promoting transparency in surgical research is essential for advancing medical knowledge and improving patient outcomes. Further efforts are required to enhance data-sharing practices within the surgical community.

**Keywords:** Surgery, Data Sharing, Systematic Review

Jordan Siegel, MS, Claire B Hornibrook, BS, Julie M Croff, PhD, W. Kyle Simmons, PhD,  
Florence J Breslin, MS

Jordan Siegel, MS, Medical Student; jordan.siegel@okstate.edu

### **Understanding The Impact of the Mother Child Relationship on health and wellness of the mother and child in the OK Moms Registry**

Introduction/Objectives: Early childhood development, particularly within the first two years of life, is shaped by both health and environmental factors. Parental health and early life experiences/exposures are key developmental determinants. Registries allow investigation of a broad spectrum of maternal and other environmental factors and their subsequent impact on child development. Potentially impactful variables include substance use, exposure to untested prescription medications during pregnancy, maternal and early life trauma, resilience, social relationships, and mental and physical health. By systematically identifying the factors that positively and negatively influence early development, targeted interventions can be designed to optimize child outcomes. The OK Moms Registry seeks to compile comprehensive data on the interrelationships between maternal health (physical and mental), environmental exposures, social networks, trauma, and resilience during pregnancy and the postpartum period, with the ultimate goal of elucidating their effects on child development and disease.

Study Methods: Participants are recruited into the registry through 1) self-selection from community events, flyers in the community, and respondent-driven sampling; or through 2) direct recruitment at the OSU Pediatric Clinic. Maternal caregivers are recruited anytime from pregnancy to 24 months postpartum. Assessments occur during pregnancy, at birth, 6, 9, 12, 18, and 24 months. Data are collected retrospectively if participants enter the study at any time postpartum. For all other participants, data are collected longitudinally over a period of up to 30 months. The birth assessment survey is sent via text message about one week before the expected due date, and if the participant has not given birth or has missed a survey, reminders are sent weekly for up to three weeks. Medical record reviews are conducted as part of the registry once consent and enrollment are completed.

Results: OK Moms has enrolled 133 maternal-child dyads. The average age of mothers is 28.65. It is 17.2% Hispanic, 58.9% White, 16.7% African American, 15.6% American Indian/Alaskan Native. The average ACE score of the mother is 2.9, with a range of 0-9. 6.8% of the mothers failed to retain custody of their children. Of those who did not retain custody of their child, the child was removed in 40% of cases, and the mother gave up rights in 60% of cases. More than a third (33.7%) of moms reported consuming alcohol before they were pregnant and none reported use after knowing they were pregnant. More than one in five (21.7%) reported using cannabis before they were pregnant, and 13% reported continued use. Nearly half (46.7%) of children report screen time with an average number of 63.5 minutes per day, and 12.9% of the children under 2 answered yes to “does your baby have a video device in their room for the purpose of playing for the child?”

Conclusions: The OK Moms registry will collect diverse data on mother and child development from pre-pregnancy to two years old, focusing on cultural, environmental, and life experience factors. This approach enables a deeper understanding of how factors like trauma, substance use, and relationships impact child development, ultimately supporting better outcomes for mothers and children.

Keywords: clinical registry, mother-baby, child development

Seth Sims, BS, Rachel Hazlitt, BS

Seth Sims, BS, Medical Student; seth.sims@okstate.edu

### **Comparing the Quality and Readability of Postoperative Instructions for Inferior Turbinate Reduction: Insights from ChatGPT and Google**

**Introduction:** This study aims to compare the quality of postoperative instructions for inferior turbinate reduction surgery obtained from ChatGPT and Google, using the DISCERN tool and readability assessments. The primary objective is to evaluate the reliability and quality of information provided by these platforms, with secondary outcomes assessing readability metrics.

**Methods:** Postoperative instructions were retrieved from ChatGPT and Google using standardized prompts to simulate common patient queries. Google searches were conducted in a cleared browser environment, and the first 10 nonsponsored results were extracted. Instructions were anonymized, stripped of audiovisual elements, and standardized for analysis. Data were scored independently by two reviewers using the DISCERN tool, with discrepancies resolved by a third reviewer. Readability was assessed using the Flesch-Kincaid Grade formula. Statistical analyses will involve ANOVA and Kruskal-Wallis tests to compare scores across sources, with significance set at  $P < 0.05$ .

**Preliminary Results:** Eleven responses were included in the preliminary analysis, with source distribution as follows: ChatGPT ( $n = 1$ ), private clinical/hospital websites ( $n = 7$ ), academic/institutional sources ( $n = 2$ ), and an online blog/forum ( $n = 1$ ). Audiovisual aids were present in 63.64% of responses, while advertisements and distractors appeared in 27.27% and 63.64% of responses, respectively.

**Future Steps:** Further steps will involve conducting detailed statistical analyses. Comparative subgroup analyses will evaluate differences between ChatGPT and Google responses in terms of quality and readability metrics. Findings will provide insights into the potential for AI-generated content to enhance patient education.

**Conclusions:** Preliminary results suggest variability in the quality and readability of postoperative instructions across sources. Most materials were written at a high reading level, with private clinical/hospital websites being the most common source. This study highlights the need for more accessible and reliable patient education resources and explores the potential of AI-based solutions like ChatGPT to address these gaps.

**Keywords:** Readability, Postoperative, Analysis, ChatGPT

Seth Sims, BS, Khanh Nguyen, BS, Carson L. Wright, BS, Patrick Crotty, BS, Alec Young, BS, Andrew V. Tran, BS, Alicia Ito Ford, PhD, Matt Vassar, PhD

Seth Sims, BS, Medical Student; seth.sims@okstate.edu

### **Endorsement of Artificial Intelligence Guidelines Across Leading Rheumatology Journals: A Cross-Sectional Analysis**

**Background:** Artificial Intelligence (AI) is a tool that is revolutionizing research and medicine, including rheumatology. While AI offers numerous benefits, its integration raises concern about ethical use, potential bias, and clinical implementation. The development of effective policies by rheumatology journals is crucial given to the high prevalence and disabling nature of rheumatologic conditions. Our study's aim is to evaluate rheumatology journals policies regarding the use of AI in research.

**Methods:** We evaluated the instructions for authors of the 71 highest ranked rheumatology journals according to the 2023 SCimago Journal Rankings. Data on AI related policies was extracted by authors including authorship criteria, publication policies, and AI usage in content and image generation. Our analysis included descriptive statistics using RStudio and R(version 4.2.1).

**Results:** Our search initially identified 71 rheumatology journals, of which 67 met inclusion criteria. We found that 37 (55.2%) journals explicitly mentioned the use of AI in their Instructions for Authors. Content generation by AI was prohibited for manuscript writing in 4 (5.9%) journals and prohibited for image generation in 12 (17.9%) journals. Established AI reporting guidelines were referenced by 3 (4.5%) journals.

**Conclusion:** Policies regarding AI usage in rheumatology journals are inconsistent, despite recognition of AI's growing role. To advance the field, we recommend that rheumatology journals address AI usage in their instructions for authors and endorse the use of established reporting guidelines. Taking these steps will enhance reproducibility, transparency, and ethical integrity of rheumatology research.

**Keywords:** Artificial Intelligence, Reporting Guidelines, Rheumatology, Transparency, Authorship

Jordyn Sisovsky, BS, Shiny Talukder, MS, Crystal Nicole Johnson, PhD

Jordyn Sisovsky, BS, Medical Student; jordyn.sisovsky@okstate.edu

### **Advancing Alternatives to Antibiotics: Investigating Bacteriocin Activity Against MRSA and GBS**

**Introduction/Objectives:** Bacteria produce antimicrobial peptides called bacteriocins that inhibit the growth and/or kill other bacteria. Efforts are being made to harness this natural activity to reduce our dependence on antibiotics, thus decreasing the spread of antibiotic resistance and associated human mortality. This study serves as an investigation into bacteriocins against Methicillin Resistant *Staphylococcus aureus* (MRSA) and *Streptococcus agalactiae* (Group B Strep/GBS), including improved bioprospecting techniques and antimicrobial activity assays. While this study is still underway, we anticipate zones of inhibition from *Bacillus* species against our target pathogens MRSA and GBS, with a protective effect against probiotic *Lactobacillus* spp. Our objective is to use these natural antimicrobial producers with activity against known pathogens to identify peptide structures which may 1) provide a more targeted approach to infections caused by single species, 2) preserve the integrity of our beneficial microbiome, and 3) provide an alternative to antibiotic use in clinical settings.

**Methods:** Five species of *Bacillus*, isolated from environmental sources, were used as bacteriocin producers, as this genus has well documented bacteriocin activity. To determine their spectrum of inhibition, *Bacillus* spp., were tested against growth of pathogenic MRSA and GBS as well as beneficial microbes isolated from the infant probiotic, Flora. The 6-strain probiotic was serially diluted and plated onto BHI and MRS broth for isolation of representative beneficial microbes. An Alto Cerillo microplate reader was used to compare the growth in aerobic and anaerobic conditions. Representative whole genome sequences, obtained from NCBI, were screened through anti-SMASH database, to gather information on homologous bacteriocin genes. Strains were routinely grown in BHI broth media and on agar plates at 37°C for 24-48hrs. Gram stain reactivity confirmed the purity of active cultures throughout experimentation.

**Results:** Temporal spectrophotometric measurements at 600nm using the Alto Cerillo microplate reader showed the growth of GBS and MRSA over 24 hours. Duplicate analysis under anaerobic conditions confirmed the facultative anaerobicity of MRSA. Antimicrobial activity was confirmed using spot plate and well diffusion assays. Spot plates of the *Bacillus* spp. overlaid with 0.75% BHI and 0.75% MRS agar, imbedded with pathogens and probiotics, respectively, showed zones of inhibition for both MRSA and select probiotic indicator strains. Using the anti-SMASH database, homologous genes to known bacteriocins were confirmed.

**Conclusion:** This research provides insights into microbial peptides effective against clinical pathogens that will help inform the future clinical options for management of infectious diseases. In order to curb the threat of antibiotic resistance, we must continue to expand our tools, and *Bacillus* spp. offer an intriguing route for exploration. Future studies will use cell free supernatants to assay purified peptides against additional pathogenic strains to demonstrate further efficacy.

**Keywords:** Bacteriocins, MRSA, Group B Strep, Bacillus, Antibiotic Resistance, anti-SMASH

Gabrielle D. Smith, BS, Kelly A. Murray, PharmD, Nicole Farrar, DO, Tyson Bryant, DO

Gabrielle D. Smith, BS, Medical Student; gabby.smith@okstate.edu

### **A novel emergency medicine simulation addressing high risk scenarios with paramedic trained firefighters**

**Introduction:** Simulation has been shown to improve resident understanding of high-risk scenarios, especially with topics that are not covered in graduate medical education. Simulation training in health-professionals education is associated with positive effects on knowledge, skills, behaviors, and patient outcomes. This novel interprofessional simulation with paramedic trained firefighters and emergency medicine (EM) residents was created on the belief that physician residents would benefit from a better understanding of the pre-hospital identification, assessment, and treatment of trauma and fire-related patients.

**Methods (Innovation/Implementation):** We outline a novel framework for designing, implementing, and evaluating the impact of a fire simulation event for an EM residency program that is concordant with ACGME standards. After touring the fire simulation site, the EM and fire department leadership collaborated on the development of fire scenarios. The three learning groups, consisting of 8-9 resident physicians (PGY1-4), rotated through the stations: a smoke house structure fire simulation case, a collapsed building trauma simulation case, and a fire hose dynamics activity. Following the identification and rescue portion, the case was transitioned to EM and simulation faculty who led the resuscitation portion. When the scenario concluded in field stabilization of the patient, the case was coded to the local emergency department and the simulation mannequin was loaded into an ambulance.

**Results (Evaluation):** Evaluation of the simulation was determined by participant's feedback and informal commentary on areas of improvement. An initial debriefing was conducted with the learners to evaluate the immediate impact on their knowledge and understanding of the simulation. A subsequent debriefing was held with the planning team to discuss successes and areas for future enhancements.

**Conclusions:** We have described the design and implementation of a novel EM resident fire simulation to address the needs of our 4-year EM residency program located within an urban hospital. Not only does this project highlight the importance of collaboration in patient care, but it also emphasizes the critical role of interdisciplinary understanding of roles and challenges. This project has the potential for expansion in similar urban settings and could also serve as a valuable tool for training rural physicians in first responder and fire rescue education. This study provides valuable insight into the development and implementation of a novel simulation event and can serve as an adjunct to the EM residency curriculum.

**Keywords:** Emergency Medicine, Fire, Trauma, Simulation



Harrison Smith, BS, Hira Noon, BA, Annes Elfar, BS, Brody Dennis, BS, Mahad Chaudry, BS, Eli Oldham, BS, Taylor Gardner, BS, Eli Paul, BS, Alicia Ito Ford, PhD, Matt Vassar, PhD

Harrison Smith, BS, Medical Student; harrison.smith@okstate.edu

### **Evaluating Data Sharing Statements in Clinical-Neurology Research: A Systematic Review**

**Background:** Open data sharing practices are crucial for maximizing transparency and ensuring reproducibility. The aim of this study is to evaluate data sharing practices in clinical-neurology journals and assess the prevalence of data sharing statements (DSS) and factors influencing their inclusion.

**Methods:** In this study, we conducted an analysis of clinical studies published in five of the top clinical-neurology journals. Data were extracted using a pilot-tested Google form in a masked-duplicate fashion. Using a hierarchical regression analysis, we analyzed DSS of articles published between January 1, 2018 to December 31, 2023 and focused on identifying DSS presence, study characteristics, and publisher policies influencing data sharing practices. Additionally, we emailed authors to assess the practical availability of DSS.

**Results:** Analysis of 1,108 eligible articles found that 63.36% (702/1,108) included DSS with a substantial increase from 34.62% (72/208) in 2018 to 79.33% (119/150) in 2023. Clinical trials showed the highest rate of DSS inclusion at 64.53% (453/702), while cohort (212/339; 62.54%) and cross-sectional studies (19/39; 48.71%) were significantly less likely to include DSS. Publisher policies varied, with journals associated with certain publishers showing higher DSS inclusion rates. Theme analysis of DSS highlighted conditional data availability and privacy concerns as predominant themes. Upon contacting authors for data requests, 29.19% (40/137) were willing to share their data, while 43.07% (59/137) would share under specific conditions.

**Conclusions:** In conclusion, the study reveals a significant increase in DSS presence in top clinical-neurology journals over the study period. Despite improvements, variability across publisher policies was noted. Addressing possible barriers through standardized guidelines and policy enforcement is crucial for advancing data accessibility and reliability in clinical-neurology research.

**Keywords:** Data Sharing, Data Sharing Statements, Open Science Practices, Neurology, TOP Guidelines

Tim Smith, BS, Cameron O'Brien, BS, Zohaib Thayani, BS, Andrew V. Tran, BS, Patrick Crotty, BS, Alec Young, BS, Alicia Ito Ford, PhD, Matt Vassar, PhD

Tim Smith, BS, Medical Student; timothy.smith11@okstate.edu

### **Evaluating Artificial Intelligence Policies in Hematology Journals: Assessing Guidelines for Authorship.**

**Background:** Artificial intelligence (AI) is transforming hematology research by improving data analysis, enhancing systematic reviews, and optimizing clinical decision-making. Despite its growing potential, AI raises concerns regarding transparency, reproducibility, and ethical standards. This study evaluates how leading hematologic medical journals address the AI integration in research through their author guidelines and policies.

**Methods:** A cross-sectional review was performed on 100 peer-reviewed hematology journals, ranked by the 2023 SCImago SJR indicator. Data was extracted from each journal's "Instructions for Authors" section to assess AI-related policies, including authorship rules, requirements for disclosing AI involvement, and guidance on using AI for manuscript preparation, data analysis, or image generation. Associations between AI-related policies and journal impact factors were also analyzed.

**Results:** Among the 100 journals, 56% referenced AI in their author instructions. 29% explicitly prohibited AI authorship, while 52% mandated disclosure of AI use in research or manuscript preparation. Only 6% allowed AI-generated text content, and 10% permitted AI-generated images. Journals with higher impact factors were significantly more likely to include comprehensive AI-related policies. However, nearly 44 % of journals lacked any mention of AI, leaving significant gaps in guidance for authors.

**Conclusion:** Although many hematology journals acknowledge the role of AI in research, a lack of standardized policies hinders transparency and ethical implementation. Establishing clear, uniform guidelines on AI use is crucial to ensure ethical, reproducible, and high-quality research practices in hematology.

**Keywords:** Artificial Intelligence, Hematology, Reporting Guidelines, Transparency, Ethical Standards

John H. Stroup, BA, Ha Huynh, BS, Elizabeth H. Hall, BS, Ryan J. Sherry, BS, Taylor Gardner, BS, Alec Young, BS, Andrew V. Tran, BS, Patrick Crotty, BS, Alicia Ito Ford, PhD, Matt Vassar, PhD

John H. Stroup, BA, Medical/Graduate Student; jstroupresearch@gmail.com

### **Exploring the Endorsement of Artificial Intelligence Guidelines Among Top Dermatology Journals: A Cross-Sectional Analysis**

**Introduction/Objectives:** Artificial intelligence (AI) is transforming dermatology research by revolutionizing data analysis, advancing systematic reviews, and driving clinical innovation. However, as the adoption of AI grows, concerns about transparency, ethical use, and reproducibility have become increasingly prominent. This study evaluates how leading dermatology journals address these challenges and opportunities, focusing specifically on their author instructions and policies.

**Methods:** A comprehensive, cross-sectional analysis was conducted on the top 100 peer-reviewed Dermatology journals, as ranked by the 2023 SCImago SJR indicator. Data was extracted from each journal's "Instructions for Authors" to identify AI-related policies, such as guidelines for AI usage, authorship requirements, and the use of AI in manuscript development and image creation. Correlational analyses were performed to explore potential links between AI policy presence and journal characteristics.

**Results:** Of the 100 journals reviewed, 45% addressed AI in their author instructions. The majority prohibited AI-generated authorship while requiring disclosure of AI's role in submissions. 17% of journals allowed AI-generated content, and 28% permitted AI-created images. We found no correlation between impact factor and the inclusion of AI policies, as the number of journals mentioning AI policies was fairly consistent across both high and low impact factor categories.

**Conclusions:** Although many Dermatology journals acknowledge AI's growing influence in research, few offer AI-specific reporting guidelines, limiting the standardization and transparency of its use. To foster ethical, reproducible, and high-quality research, we advocate for the widespread adoption of comprehensive AI policies.

**Keywords:** Artificial Intelligence, Reporting Guidelines, Dermatology, Transparency, Authorship

Vinay Swami, BS

Vinay Swami, BS, Medical Student; vswami@okstate.edu

**Trends Influencing Data Sharing Statements in High-Impact Dermatology Journals:  
A Systematic Review**

Skin diseases pose a significant global health challenge, underscoring the need for rigorous dermatology research. Data sharing statements (DSS) are critical for research transparency and collaboration, yet gaps in their implementation raise concerns about reproducibility and validity. This study systematically evaluated DSS prevalence and influencing factors in the top five dermatology journals from 2017 to 2023, and assessed practical data sharing by contacting authors who reported data availability upon request. Out of 1148 articles, 297 included DSS, with clinical trials showing the highest inclusion rate (30.71%). DSS prevalence increased from 4.35% in 2017 to 73.1% in 2023. Open access and industry-funded studies were more likely to include DSS, whereas government-funded studies were less likely. Thematic analysis revealed that conditional availability was common, but actual data accessibility was limited. Despite progress in DSS presence, significant barriers to data sharing remain, highlighting the need for standardized protocols to enhance transparency and reproducibility in dermatology research.

Keywords: Dermatology analysis data sharing

Kelli Swank, BS, Macy Haight, BS, Sarah Nelson, BS, Colony Fugate, DO, Dustin Beck, DO, Micah Hartwell, PhD

Kelli Swank, BS, Medical Student; kelli.swank@okstate.edu

### **Quantifying rates of electronic nicotine delivery systems use in middle school-aged adolescents: a cross-sectional analysis of the Youth Risk Behavior Surveillance System**

**Introduction/Objectives:** Given the known rates of high school age electronic nicotine delivery systems (ENDS) usage, and the lack of reports for middle school (MS) aged ENDS usage, our primary objective is to assess ENDS usage by MS students using the Youth Risk Behavior Surveillance System (YRBSS) and assess trends among this group from 2015 through 2021. Our secondary objective is to identify disparities in ENDS usage by sex, educational grade level, and ethnoracial groups.

**Methods:** Our study pooled data from the 2015-2021 combined MS YRBSS and we were able to report the sample size of MS students who had ever used ENDS. Additionally, we estimated the weighted prevalence using 95% confidence intervals of ENDS use by YRBSS cycles occurring biennially from 2015-2021. We approximated the frequency of ENDS use in the past 30 days before administration of the survey and reported sample size along with weighted prevalence of these variables. Further, weighted prevalence was calculated by sex, educational grade level, and ethnoracial groupings.

**Results:** Results indicated that between 2015-2021, 17.90% of MS students reported ever using an ENDS. Of those MS students who reported ever using an ENDS, 8.53% reported use in the past 30 days. The highest rates of electronic vapor product use occurred among Native Hawaiian/Other Pacific Islanders (20.12%) followed by American Indian/Alaska Natives (13.64%). Trends of ENDS use among MS students decreased in 2021 (15.1%) compared to the highest usage rate in 2019 (21.5%) with no significant difference between male and female total usage rates.

**Conclusions:** Research has shown that adolescents are more likely to initiate smoking combustible cigarettes when exposed to marketing. Regulating ENDS marketing could limit adolescent exposure; however, given that nearly 1 in 6 children reported using ENDS at some point, there is a need for comprehensive public health campaigns to vaping with cultural awareness and evidence based programs. Per the ENDS committee's findings, ENDS not only pose the risk of lifelong nicotine dependence but are associated with adverse health outcomes such as pro-atherosclerotic effects, compromised lung defense mechanisms, and fatal poisoning associated with misuse of e-liquids, therefore prevention efforts are warranted at early ages. Further research is needed to explore possible causes for ethnoracial disparities in ENDS usage including targeting marketing, and to provide more culturally informed resources to these people groups.

**Keywords:** Electronic nicotine delivery systems, adolescents, public health

Shiny Talukder, MS, Jordyn Sisovsky, BS, Crystal Nicole Johnson, PhD

Shiny Talukder, MS, Graduate Student; shiny.talukder@okstate.edu

### **Development of high-throughput techniques to assess bacteriocin activity for targeted pathogen management**

**Introduction/Objectives:** As antibiotic resistance in bacterial pathogens is on the rise, antimicrobial peptides (AMPs) offer an effective solution against potential global pandemics. These AMPs, termed 'bacteriocins' are naturally produced by many microbial strains. AMPs may provide an alternative strategy to clinical antibiotic use due to their diverse mechanisms of action and diminished imposition of resistance. In an effort to develop high-throughput methods to assay bacteriocin activity against known pathogens, we employed spot plate, well diffusion, and microplate reader techniques to analyze the growth of bacteriocin-producing microbes on *Streptococcus agalactiae* (Group B Strep) and *Staphylococcus aureus* (MRSA). In order to assess the collateral damage to beneficial microbes such as Lactic Acid Bacteria, we also considered the bacteriocin activity against *Lactobacillus* spp. Our objective was to determine prejudicial effects of various species within the *Bacillus* genus (*Bacillus cereus*, *Bacillus pumilus*, *Bacillus thuringiensis*, and *Bacillus subtilis*) on Group B Strep, MRSA, and *Lactobacillus*. By developing these high-throughput methods, we will facilitate the screening of bacteriocin activity from different clinical and environmental samples against the World Health Organization's Top Priority Pathogen List.

**Methods:** Isolation of *Lactobacillus* strains was performed from a commercial toddler probiotic via serial dilution and plating onto MRS plates. Pathogenic organisms were acquired from ATCC (*GBS* NCTC\_8532 and *Staphylococcus aureus* NCTC\_8181) and cultured in BHI broth at 37°C aerobically. Freshly grown strains were transferred into a 96-well plate, placed into the Alto microplate reader, and conditionally assayed to establish a working SOP. The Alto device was assessed under ambient conditions using end-point modality, followed by aerobically at 37°C using end-point and kinetic data collection, and lastly within the anaerobic chamber in kinetic mode for 24 hours. Results from the microplate reader were transformed into growth curves. Separately, *Bacillus* species were isolated and stamped onto BHI agar plates. After 24 hours, spot plates were overlaid with sloppy agar (0.75% BHI and MRS agar) containing active cultures of *Lactobacillus*, *GBS*, and *MRSA* strains. Zones of inhibition were measured after overnight incubation. A well diffusion assay (WDA) was also performed using the cell free supernatant of *Bacillus* strains overlaid with *MRSA* and *GBS* in 0.75% BHI broth to determine whether bacteriocin activity is associated with cells or is released into the environment.

**Results:** Growth curves were observed for *Streptococcus agalactiae* and *Staphylococcus aureus* in both the incubator and anaerobic chamber. Antimicrobial activity was confirmed using spot plate and WDAs. The stamped *Bacillus* plates overlaid with 0.75% BHI and 0.75% MRS agar with probiotics revealed zones of inhibition.

**Conclusion:** In this study, known bacteriocin producing *Bacillus* species were used to determine their inhibitory effects on clinical pathogens by using augmented techniques. Further development of this high-throughput methodology will facilitate our ability to identify unknown bacteriocin-producing organisms and add to our arsenal of antimicrobial compounds.

**Keywords:** AMP; Antimicrobial Peptide, BHI; Brain Heart Infusion, MRS; deMan Rogosa and Sharpe.

Karlyn Tanzey, BS, Jordan Wilson, BS, Rachel Hazlitt, BS

Karlyn Tanzey, BS, Medical Student; ktanzey@okstate.edu

### **Do SGLT2 Inhibitors Impact Pulmonary Symptoms in Heart Failure Patients? A systematic literature review**

**Background:** Sodium-glucose cotransporter-2 (SGLT2) inhibitors have shown promise for reducing adverse cardiovascular events in patients with heart failure. Our study looked at the effects of SGLT2 inhibitor use on pulmonary outcomes in patients with all types of heart failure. With comorbidities such as pulmonary hypertension in patients with heart failure, we looked at the evidence of pulmonary function in patients with heart failure through echocardiogram. Our study seeks to determine the use of SGLT2 inhibitors to alleviate pulmonary comorbidities in heart failure patients.

**Methods:** We employed a search string to identify relevant published manuscripts on Cochrane Database of Systematic Literature Reviews, PubMed, Web of Science, Scopus, and Embase. Authors screened articles by title and abstract based upon predetermined inclusion criteria in a double-blind fashion. Full text of included articles were then screened for relevant pulmonary measures and outcomes. General study characteristics, patient population measures, echocardiogram measures, pulmonary measures, and pulmonary outcomes were recorded.

**Results:** Our literature search returned 2,367 articles, of which 22 met inclusion criteria. Echocardiograms were performed, and various measures were recorded across all of the 22 included studies. These measures included tricuspid valve pressures in 7 studies (31.8% [7/22]), right atrium pressures in 3 studies (13.6% [3/22]), right ventricle pressures in 4 studies (18.1% [4/22]), pulmonary artery pressure in 10 studies (45.5% [10/22]), left atrium pressures in 17 studies (77.3% [17/22]), and mitral valve pressures in 14 studies (63.6% [14/22]). Pulmonary outcomes were reported in 12 articles (54.5% [12/22]). Among these, 4 studies (33.3% [4/12]) recorded pulmonary capillary wedge pressure, 3 studies (25.0% [3/12]) performed a cardiopulmonary exercise test, 5 studies (41.7% [5/12]) performed a 6-minute walk test, 2 studies (16.7% [2/12]) performed a lung ultrasound, and 1 study (8.3% [1/12]) obtained a clinical dyspnea score.

**Conclusion:** Out of the 22 articles included in our study, none explicitly looked at the impact of pulmonary outcomes in heart failure patients while taking a SGLT2 inhibitor. While some studies report pulmonary outcome measures with SGLT2 usage in heart failure patients, there is a lack of standardization and consistency of these measures, as none of the included studies used the same measures. While methods to assess pulmonary function are available, they are often used inconsistently or not fully reported, hindering the ability to evaluate the effects of SGLT2 inhibitors on pulmonary outcomes and comorbidities in heart failure patients. In order to gain insight on the impact of SGLT2 inhibitors on pulmonary symptoms in heart failure patients, standardization of these measures is essential to better understand pulmonary outcomes and comorbidities in these patients.

**Keywords:** SGLT2 inhibitor, heart failure, echocardiogram, pulmonary comorbidities

Madison Taylor, BS, Allie Rice, BS, Amy Hendrix-Dicken, MA, Christine Beeson, DO, Micah Hartwell, PhD

Madison Taylor, BS, Medical Student; madison.w.taylor@okstate.edu

### **A Demographic Overview of Children in the Emergency Department: Findings from the NHAMCS, 2019**

**Background:** Our primary objective was to analyze and describe the population characteristics — including race and ethnicity, age, insurance status, and comorbidities—among all pediatric ED visits included in the National Hospital Ambulatory Medical Survey (NHAMCS). Due to prevalent healthcare disparities, our secondary objective was to evaluate the demographic factors in triage level, ED wait times, and intentional vs unintentional traumas and poisoning.

**Method:** We conducted a cross-sectional analysis using the 2021 NHAMCS data to determine the prevalence of pediatric ED visits in the United States. Our sample consisted of 337 hospitals in the US, reporting 16,207 ED visits. We used  $X^2$  tests logistic regression to assess wait times, triage level, and self-inflicted injuries or poisoning.

**Results:** Our results showed that Indigenous children's wait times were twice that of other racial groups. Additionally, rates of ED visits for trauma, poisoning, or overdose were higher in non-MSA regions. Lastly, children aged 15-17 had the highest percentage of emergent triage level visits—nearly double the percentage for all other age group categories.

**Conclusion:** In summary, our study represents a pediatric ED population primarily composed of children under 7 years of age, within MSA regions, and consistent with the national ethnoracial census. More than 12% of pediatric ED patients had 1 or more comorbidities, and nearly 3 in 5 visits were covered through Medicaid/CHIP. To improve overall access and decrease non-emergent ED usage, we recommend that healthcare workers implement extended hours, expanded language services, and use of telehealth.

**Keywords:** Pediatrics, Emergency Medicine, Systematic Reviews/meta-analyses, Rural Health, Health Care Disparities



Shannon Tewari, BS, Tucker Hopkins, BS, Caroline Markey, MD, Will Roberts, DO, Micah Hartwell, PhD

Shannon Tewari, BS, Medical Student; shannon.tewari@okstate.edu

### **An examination of clinical trials for post-operative, non-opioid pain management within the National Library of Medicine's Clinical Trials Database**

**Introduction/Objectives:** Clinical trials are essential for the advancement of medical practice and patient care. In recent decades, opioids have been widely prescribed for managing post-operative pain, resulting in significant dependence and overuse. This study assesses recent clinical trials from the National Library of Medicine's Clinical Trials database that utilize non-opioid treatment approaches for post-operative care.

**Design Methods:** We searched for interventional trials registered at ClinicalTrials.gov from January 2009 through December 18, 2024. The trials were included in our analysis if they assessed only non-opioid post-operative pain management.

**Results:** From the search of ClinicalTrials.gov, 52 trials were returned, from which 3 were excluded for being non-interventional and 2 were excluded for only including opioid treatments. Of the 47 trials included in the analysis, 22 (46.8%) were completed, 14 (29.8%) were active (or in enrolling or pre-enrolling stages), 7 (14.9%) were discontinued (suspended, terminated, or withdrawn) and 4 (8.5%) had unknown status. Among the completed trials, 21 (95.5%) used non-opioid drugs, while 1 (4.5%) used devices such as continuous local wound infusion (CLOWI). Of note, 11 (23.4%) of the 47 trials were specific to women, and 24 (51.0%) were conducted in the US.

**Discussion/Conclusion:** Given the harms of opioid overuse, there is an urgent need for post-operative medical practices that reduce the risk of resultant dependence on these drugs. Our results showed that 47 non-opioid trials for post-operative pain have been registered since 2009. Among those trials, nearly half were conducted outside the United States, which is particularly noteworthy given the impact of the long-lasting opioid epidemic in the U.S. Additionally, nearly 1 in 4 trials were exclusive to females with the majority evaluating NSAIDs or local anesthetics as non-opioid alternatives for alleviating postoperative pain following cesarean section or gynecological surgery.

**Keywords:** non-opioid, postoperative, pain

Shannon Tewari, BS, Tucker Hopkins, BS, Amy Hendrix-Dicken, MA, Micah Hartwell, PhD

Shannon Tewari, BS, Medical Student; shannon.tewari@okstate.edu

### **Hidden Statistics: Examining the obesity epidemic across Native Americans using self-reported identity compared to imputed racial categories**

**Introduction/Objectives:** To identify obesity rates among high school students who identify solely as non-Hispanic, American Indian/Alaska Native (AI/AN) in comparison to a disaggregated approach that includes all youth identifying as AI/AN—alone or in combination with other ethnoracial groups using the 2021 Youth Risk Behavior Surveillance System (YRBSS)

**Design Methods:** We conducted a cross-sectional analysis of the Youth Risk Behavior Surveillance System (YRBSS) to assess obesity rates among high school students in the United States, self-reporting as AI/AN alone or in combination, compared to the imputed race variable in YRBSS.

**Results:** According to the imputed race variable, 119 high school students were classified as AI/AN only, with 30 being classified as obese (30; 29.43%). In contrast, 664 participants identified as AI/AN alone or in combination with other racial groups, with 149 students classified as obese (149; 22.11%). The self-report data yielded a total of 128 AI/AN-only high school students, with 31 students being classified as obese (31; 25.7%). Obesity rates varied among the other AI/AN subgroups: AI/AN and White/Caucasian (15.23%), AI/AN and Black (21.72%), AI/AN alone with Hispanic/Latino ethnicity (23.52%), or AI/AN in combination with 1 or more race (24.25%).

**Discussion/Conclusion:** Disaggregation of ethnic groups into smaller subgroups by allowing individuals to self-report ethnoracial status limits bias and provides a more accurate dataset. Accurate data representation is crucial for adequately reporting obesity and other metabolic disorders in conjunction with race/ethnicity in medicine. Classifying AI/AN populations as non-Hispanic/Latino single-race limits the population size and hinders the amount of public resources that are allocated towards AI/AN health and well-being.

**Keywords:** obesity, statistics, race

Zohaib Thayani, BS, Tim Smith, BS, Cameron O'Brien, BS, Alec Young, BS, Andrew V. Tran, BS, Patrick Crotty, BS, Alicia Ito Ford, PhD, Matt Vassar, PhD

Zohaib Thayani, BS, Medical Student; zohaib.thayan@okstate.edu

## **Evaluating Artificial Intelligence Policies in Oncology Journals: Assessing Guidelines for Use and Authorship**

**Introduction/Objectives:** Cancer impacts a significant number of individuals, with approximately 20 million cases reported in 2022, with nearly 10 million cancer-related deaths globally. Investing in cancer research therefore carries immense value, with the goal of better preventing, diagnosing, and effectively treating cases of various types of cancer. Given the novelty of AI in research, it is important to understand its effects on scientific research. Journal policies on the use of AI in publishing research remain ambiguous due to the absence of universal guidelines for its implementation. To our knowledge, no studies have investigated journal guidelines on AI within oncology research. Therefore, our study aimed to assess how AI is addressed in policy and reporting guidelines within the field of oncology.

The primary objective of this study was to evaluate how AI is addressed in policy and reporting guidelines within the top 100 oncology journals. The secondary outcome focused on reviewing and summarizing the policies across these journals regarding the use of AI-generated content, including text, images, and writing, as well as the acceptance or prohibition of AI authorship.

**Methods:** Clinical oncology journals were identified using the SCImago Journal and Country Rank (SJR) database. The top 100 peer-reviewed clinical journals in oncology were evaluated. Discontinued journals and those without accessible author instructions or editorial contact were excluded. Three investigators, ZT, TS, CO, independently extracted data from author instructions using a masked, duplicate approach. For journals mentioning AI in their author instructions, policy details on authorship, manuscript writing, content and image generation, and AI-specific reporting guidelines were extracted. Correlational analyses in R (v4.2.1) and RStudio examined links between AI policies and journal characteristics.

**Results:** AI was mentioned in 68% of the top 100 oncology journals. Of the journals, 67% allowed for authorship, while the remaining 33% did not have any statement for AI in authorship. Additionally, 64% of journals required authors to disclose the use of AI, with 36% of journals having no statement of AI in authorship. Of the top 100 journals, 56% allowed for AI for manuscript writing (grammar, revising), whereas 44% had no statements; 12% of journals allowed for AI to be used in content generation (i.e., data curation), 43% did not mention, and 45% having no statement. For image generation, 11% of journals allowed for the use of AI, 46% did not, and 43% had no statement.

**Conclusion:** The majority of the top 100 oncology journals mention the use of AI in their instructions for authors, with most requiring its disclosure by authors and allowing for its use in manuscript writing. Though, most journals did not allow the use of AI for content generation and image generation. The concern for the transparency and the correct use of AI remains strong, as almost one third of the journals did not mention AI in their instructions for authors. Future studies should be conducted to allow for a clearer picture on the influences of AI within oncological research.

**Keywords:** artificial intelligence, oncology, journal guidelines

Albert Tran, BA, Lauren Kocour, BS, Ryan Sherry, BS, Hartley Hall, BS, Patrick Crotty, BS, Alec Young, BS, Andrew V. Tran, BS, Alicia Ito Ford, PhD, Matt Vassar, PhD

Albert Tran, BA, Medical Student; albert.tran@okstate.edu

### **Assessing AI Integration in Psychiatry Research: Evaluating Policies Across Leading Journals**

**Introduction/Objectives:** By refining systematic reviews, enhancing data analysis, and discovering clinical applications, AI is revolutionizing psychiatry and mental health research. However, the rise and mounting reliability of AI in research bodes significant concerns about transparency, ethics, and reproducibility. With the advent of generative AI, human prompting is no longer necessary in creating, reviewing, and drawing conclusions from data. This study examines how leading psychiatry and mental health journals address these challenges through their author instructions and editorial policies.

**Methods:** A cross-sectional review of the top 100 peer-reviewed psychiatry and mental health journals, ranked by the 2023 SCImago SJR indicator, was conducted. Data from each journal's "Instructions for Authors" were extracted to assess AI-related policies, including authorship criteria, guidelines for reporting AI use, and the acceptance of AI-generated content (e.g., manuscript preparation and image generation). Correlational analyses were then performed to examine associations between these policies and journal characteristics.

**Results:** 100 journals were assessed and 91% of them included AI use in their author instructions. Most prohibited AI authorship, but required disclosure of AI involvement in submissions. AI-generated content was allowed by 22% of journals, and 13% permitted AI-generated images. Journals with higher impact factors were more likely to have detailed AI policies. However, significant gaps in standardization and guidance persist.

**Conclusions:** While many psychiatry and mental health journals recognize AI's growing role in research, few have implemented specific reporting guidelines (RGs) for its use. This glaring absence of standardized guidelines threatens both the transparency and the integrity of AI-driven research. Without comprehensive regulations, the risks of unethical practices and irreproducible results loom large. To safeguard ethical and high-quality research in this rapidly evolving era, the adoption of robust AI guidelines is urgently needed.

**Keywords:** Artificial Intelligence, Reporting Guidelines, Psychiatry and Mental Health, Transparency, Authorship

Andrew V. Tran, BS, Wyatt Compton, MBA, MS, Victor Do, BS, Eli Paul, BS, Tim Smith, BA, Alicia Ito Ford, PhD, Matt Vassar, PhD

Andrew V. Tran, BS, Medical Student; andrew.tran@okstate.edu

### **An In-Depth Evaluation of Data-Sharing Policies and Author Compliance in Leading Pain Medicine Journals: A Comprehensive Cross-Sectional Analysis.**

**Background:** Reproducibility and transparency are essential pillars of high-quality biomedical research, particularly in chronic pain management, a field with significant societal and economic impacts. Despite increasing recognition of their importance, adherence to data-sharing practices remains inconsistent, with varying levels of engagement among top journals in pain and pain management (P&PM).

**Methods:** Original research articles from five of the top P&PM journals were screened and analyzed for data-sharing statements (DSS). Furthermore, we identified influential variables on the inclusion of DSS in pain clinical-studies; and thematically analyzed their content to identify prevalent themes. Lastly, corresponding authors were contacted to assess their willingness to share their data.

**Results:** A comprehensive literature review of clinical studies published between 2020 and 2023 identified 602 eligible articles. DSS inclusion varied significantly, with the *Journal of Headache and Pain* achieving 100% compliance, while others, such as the *Journal of Pain and Symptom Management*, lagged at 20%. Hierarchical logistic regression highlighted substantial journal-level variability, but no significant differences by study design. Thematic analysis revealed pervasive reliance on corresponding authors (68.97%) and conditional data availability (93.87%) as barriers to open data sharing. When contacted, only 34.38% of corresponding authors responded, with less than half providing data as promised.

**Conclusions:** This cross-sectional study evaluated the use of data-sharing statements (DSS) in the five leading P&PM journals, analyzing trends and barriers to implementation. These findings underscore the need for stronger policies and resources to support transparency. Recommendations include adopting mandatory DSS policies, providing editorial support, and fostering collaborations to standardize open science practices across the field.

**Keywords:** Data-sharing, Pain, Pain Management, Medicine, Transparency

Forrest Valkai, MA

Forrest Valkai, MA, Graduate Student; forrest.valkai@okstate.edu

### **Biomed Beyond Binaries: Establishing New Language Guidelines for Communication and Research Regarding Sex and Gender**

**Background:** The fields of biology and medicine are united within biomedical sciences. As such, research and communication in this discipline rely on precise language to address the complexities of human diversity in a way that both adheres to scientific accuracy and supports human wellbeing. Traditional frameworks of sex and gender often fall short in this cause, leading to oversimplifications that both hinder research and harm intersex, transgender, and gender-diverse communities. Key findings in biology, anthropology, psychology, neuroscience, and medicine over the last century reveal the non-binary nature of biological sex, the cultural components of gender, and the dynamic interplay between genetics, hormones, and environment which leads to diverse phenotypes.

**Methods:** A comprehensive literature review was carried out to explore the biological, cultural, and social dimensions of sex and gender.

**Results:** Modern evidence challenges binary models and emphasizes the importance of acknowledging the spectrum of human variation while conducting research and communicating science to the general public. Best practices in physical and mental healthcare underscore the importance of adopting inclusive language and methodologies to better represent and address the needs of all individuals.

**Conclusion:** Reexamining and refining the language used in biomedical sciences is essential for fostering a more accurate and empathetic approach to both studying and teaching human diversity in science and medicine. By integrating inclusive methodologies and communication practices, the scientific community can more effectively support the wellbeing of all individuals while promoting a more accurate understanding of sex and gender in both academic and public spheres.

**Keywords:** sex, gender, inclusion

Jared Van Vleet, BS, Cameron O'Brien, BS, Griffin Hughes, BS, BA, Samuel Shepard, DO, Amar Patel, DO

Jared Van Vleet, BS, Medical Student; jared.van\_vleet@okstate.edu

### **Navigating Total Ankle Replacement: A Patient's Guide Through the Web**

**Background:** Ankle osteoarthritis, primarily posttraumatic, affects younger patients with extended life expectancies, significantly impacting their physical and mental quality of life. Surgical interventions, such as ankle fusion and ankle replacement, are crucial for managing end-stage ankle osteoarthritis. Ankle fusion has been the gold standard, providing consistent symptom relief, while total ankle arthroplasty (TAA) has evolved with improved designs and biomechanical properties. Studies indicate a notable increase in TAA rates compared to total knee and hip arthroplasty. However, the debate continues regarding the long-term outcomes and risk-benefit analysis of TAA versus ankle fusion, with individual patient characteristics and functional demands playing a significant role in treatment decisions.

**Methods:** We conducted a study to analyze information related to total ankle replacement procedures. Using Google searches and the SEO minion Chrome extension, we collected and categorized 100 FAQs from reliable sources. We used the Rothwell classification for FAQ transparency, evaluated source transparency using the JAMA benchmark tool, and assessed source quality with Brief DISCERN. Statistical analysis was performed in R(4.3.1) and RStudio, including descriptive statistics, Fisher's exact test for JAMA Benchmark item presence, and the Kruksal-Wallis test for website category differences in Brief Discern Scores. Dunn's test was used for post-hoc analysis with Holm correction for multiple comparisons.

**Results:** Our Google search returned 100 unique FAQs after removing duplicates and unrelated FAQs. The majority were classified as fact-based questions (47/100, 47%), followed by value (30/100, 30%) and policy questions (23/100, 23%). Overall the most common topic searched was related to the timeline of recovery (17/47, 36.2%). The frequent answer sources were medical practice/hospital (44/100, 44%), followed by academic (27/100, 27%) and government (24/100, 24%). The Kruksal-Wallis test revealed a significant difference in mean quality scores among the 4 source types ( $H(3) = 8.7445$ ,  $p = 0.03$ ) with medical practices/hospitals averaging the worst score (16/30) compared to academic sources which were found to have the highest score (22/30).

**Discussion:** When seeking online information regarding total ankle replacement surgery, patients using Google most often searched fact-based questions pertaining to the timeline of recovery. Medical practices and hospitals were the most common sources answering these questions but scored the lowest in quality and transparency. The study's cross-sectional design limits its generalizability to the specific period when the searches were conducted. Additionally, while the JAMA Benchmark and Brief DISCERN tools assess the structure and credibility of sources, they do not evaluate the accuracy of the information presented.

**Keywords:** Total Ankle Replacement (TAA), Source Quality, FAQs, Foot and Ankle, Orthopedics

Alexandra Vanzant, BS, Sachi Pathak, BS, Gabby Smith, BS, Carldon Deniega, BS, Subhas Das ,PhD, Rashmi Kau, PhD

Alexandra Vanzant, BS, Medical Student; alexandra.vanzant@okstate.edu

### **Liver Glycogen Phosphorylase as a Potential Sex Based Biomarker for Hepatitis C-Cirrhosis progression to Hepatocellular Carcinoma**

**Introduction/Objectives:** Hepatitis C virus (HCV) infection affects millions globally and remains a leading cause of cirrhosis and hepatocellular carcinoma (HCC). While different biomarkers for HCV progression are currently being researched, there is little known about sex-based biomarkers. It is significant to acknowledge sex-based differences in diseases especially due to previous research that showed liver estrogen receptor (ER)-mediated sex-based differences exist in cirrhosis and HCC patients. Liver ER-binding may lead to protective effects in pre-menopausal women. Showing that there were sex-based differences led us to investigate the glycogen phosphorylase enzyme family, specifically the liver isoform (PYGL). It plays a key role in glycogen metabolism. Dysregulation of PYGL has been studied in different cancers, yet its role in sex-based differences in HCV-induced cirrhosis and HCC remains unexplored. This study aimed to evaluate the sex-based differential expression of PYGL and its potential role as a biomarker in HCV-induced cirrhosis and HCC progression.

**Methods:** 65 (healthy, cirrhosis, HCC) liver tissues were obtained from NIH Liver Tissue Bank. DIA proteomics mapped 4445 proteins, including PYGL. Immunohistochemistry (IHC) validated PYGL protein expression in these tissues.

**Results:** From the proteomics study, PYGL is not upregulated in HCV-cirrhosis males compared to healthy controls but shows significant upregulation in HCV-cirrhosis females, highlighting sex-based differences. In HCC patients, PYGL is significantly upregulated regardless of sex, with no observed differences between males and females. From IHC, PYGL expression was confirmed to be present in all three tissue types across both sexes.

**Conclusions:** PYGL was upregulated in HCC patients in comparison to controls. This upregulation should be investigated to see if the upregulation is specific to the liver or the tumor itself. Elevated PYGL expression in females may serve as a biomarker for early-stage HCV-related liver disease progression to hepatocellular carcinoma.

**Keywords:** Hepatitis C virus, cirrhosis, hepatocellular carcinoma, gender, PYGL



Nathan Varughese, BS, Abby Dennis, BA, Jacob Duncan, BA, Alex Hagood, BSN, Eli Oldham, BS, Mahad Chaudry, BS, Brody Dennis, BS, Eli Paul, BS, Alicia Ito Ford, PhD, Matt Vassar, PhD

Nathan Varughese, BS, Medical Student; nathan.p.varughese@okstate.edu

### **Evaluating Data Sharing Statements in High Yield Psychiatry Journals: A Systematic Review**

**Background:** Psychiatric disorders affect approximately one in eight people worldwide, with economic impacts projected to reach \$6 trillion by 2030. Effective data sharing is crucial for advancing psychiatric research, yet its practice remains inconsistent due to ethical and regulatory challenges. This review aimed to evaluate the prevalence and determinants of data sharing statements (DSS) in psychiatric research. We focused on how journal policies, study design, and other factors influence DSS inclusion in clinical trials and observational studies, examining trends and barriers to transparency and reproducibility.

**Methods:** We systematically reviewed articles from the ten highest-impact psychiatric journals published between January 1, 2018, and December 31, 2023. We assessed DSS presence, tracked trends, and analyzed factors affecting DSS inclusion using hierarchical logistic regression. A thematic analysis categorized DSS content and evaluated the follow-through on data sharing promises.

**Results:** Of 1,042 reviewed articles, 319 included DSS. The proportion of articles with DSS rose from 5% in 2017 to 56% in 2023. DSS inclusion varied significantly among journals; The Lancet Psychiatry and The British Journal of Psychiatry reported high inclusion rates, while the American Journal of Psychiatry had low rates. Clinical trials were more likely to include DSS than other study designs. Regression analysis identified higher journal impact factors, open access status, and study design as significant predictors of DSS presence. Thematic analysis highlighted prevalent themes like 'Gatekeeper Role' and 'Conditional Data Availability,' reflecting concerns about data privacy and accessibility.

**Conclusions:** Despite a rising trend in DSS inclusion, substantial variability exists across journals and study designs. Journal policies and impact factors play a critical role in DSS presence. To enhance research transparency and reproducibility, standardizing data sharing guidelines, improving journal policies, and providing better researcher education are essential. Addressing ethical and legal concerns while promoting open science practices will improve research quality and psychiatric care outcomes.

**Keywords:** Psychiatry, data sharing, systematic review

Kelly Villiers, MS

Kelly Villiers, MS, Graduate Student; kelly.villiers@okstate.edu

### **Assessing the Impact of Climate Change and Antimicrobial Resistance on Emerging and Re-Emerging Infectious Diseases**

**Introduction/Objectives:** Climate change is slowly altering environmental conditions. It is also enabling spread of vector-borne diseases to new geographic areas. In the Central Flyway region, which includes the region of Texas, Oklahoma, and Kansas to the Dakotas, rising temperatures and changing precipitation patterns are expanding the range of diseases like West Nile virus (WNV). Warmer winters in northern parts of the Central Flyway like North Dakota and South Dakota, and warmer winters at the southern end in Texas, have been linked to increased WNV cases. Texas led the United States in cases reported by residents in 2024. We examine how warmer winters in the Dakotas and Texas contribute to the proliferation of mosquito species—*Culex tarsalis* in the Dakotas and *Culex quinquefasciatus* in Texas—both of which are primary vectors for WNV. The objective is to explore the relationship between climate change, these mosquito species, and the spread of West Nile Virus, and to highlight the urgency of adaptive public health strategies.

**Methods:** Mixed methods were used, researching both qualitative evidence from climate data, disease surveillance reports, and health studies specific to the Central Flyway region, along with quantitative data from recent disease surveillance. The analysis includes empirical studies on how climate change affects the distribution of mosquito species, including *C. tarsalis* and *C. quinquefasciatus*. Case studies of local health system responses to these emerging diseases are also reviewed.

**Results:** Research analysis revealed patterns showing how increasing temperatures and changes in precipitation in the Central Flyway are expanding the range of *C. tarsalis* and *C. quinquefasciatus*. Warmer winters in the Dakotas are resulting in higher populations of *C. tarsalis*, leading to higher incidences of WNV in the northern parts of the Central Flyway. Warmer winters in Texas have caused a similar rise in *C. quinquefasciatus*. This is further contributing to the spread of WNV. The study shows a need for health systems that are integrated in ways that consider both environmental changes and health system capacity to handle emerging infectious diseases due to climate change.

**Conclusions:** A public health approach with multiple facets is needed to address the growing threat of West Nile Virus in the Central Flyway. Some of the key recommendations to address this threat include strengthening of local, regional and national disease surveillance systems and improving antimicrobial stewardship. In addition, regional cooperation is needed to prevent the further spread of West Nile Virus. Policy development and increased healthcare capacity are both needed to address the impact of climate-driven disease spread.

**Keywords:** Climate change, West Nile virus, vector-borne diseases, disease surveillance, public health interventions.

Pau Von, BS, Benjamin Hudgens, BS, Luis Frias Perez, BS, Noah Barks, BS, Kellen Stadler, BS, Alec Young, BS, Andrew V. Tran, BS, Patrick Crotty, BS, Alicia Ito Ford, PhD, Matt Vassar, PhD

Pau Von, BS, Medical/Graduate Student; pau.von@okstate.edu

### **The Utilization of AI in Top Surgery Literature: Insights from a Cross-Sectional Study**

**Background:** Artificial intelligence (AI) is reshaping the landscape of surgical research by optimizing data analysis, systematic reviews, and clinical applications. Despite its potential, the integration of AI introduces important challenges, including transparency, ethical usage, and the reproducibility of findings. Addressing these issues is essential to ensure responsible and effective implementation within the field. This study investigates how leading surgical journals confront these challenges and embrace emerging opportunities by analyzing their author instructions and editorial policies. Examining these guidelines offers valuable insights into the evolving role of AI in surgical research and its potential impact on the future of the field.

**Methods:** A cross-sectional review was conducted on the top peer-reviewed surgical journals, ranked according to the 2023 SCImago SJR indicator. Data were collected from each journal's "Instructions for Authors" to assess policies related to artificial intelligence, including AI-specific reporting guidelines, authorship criteria, and the use of AI in manuscript preparation and image creation. Correlational analyses were performed to examine potential relationships between the presence of AI policies and various journal characteristics. This study provides insights into how surgical journals are addressing the evolving influence of AI in academic publishing.

**Results:** Out of the 100 journals reviewed, 84% addressed AI usage in their author instructions, with the majority prohibiting AI authorship while requiring disclosure of AI involvement in submissions. AI-generated content was permitted by 46% of the journals, and 49% approved the use of AI-generated images. Journals with higher impact factors were more likely to feature detailed AI-related policies. However, significant gaps in standardization and clear guidance on AI use persist across the field.

**Conclusion:** Although many surgical journals acknowledge the role of AI in research, only a few endorse AI-specific reporting guidelines, hindering the standardization and transparency of AI usage. To promote ethical, reproducible, and high-quality research in this era of AI-driven innovation, we recommend the adoption of comprehensive guidelines tailored to the responsible use of AI technologies.

**Keywords:** Artificial Intelligence, Reporting Guidelines, Surgery, Transparency, Authorship

Beck Wakefield, BA, **Danielle Waller, BSN**, Khanh Nguyen, BS, Rachel Hazlitt, BS, Patrick Crotty, BS, Andrew Tran, BS, Alec Young, BS, Alicia Ito Ford, PhD, Matt Vassar, PhD

Beck Wakefield, BA, Medical Student; beck.wakefield@okstate.edu

### **Endorsement of Artificial Intelligence Guidelines Across Leading Geriatric Journals: A Cross-Sectional Analysis**

**Background:** Artificial intelligence (AI) is revolutionizing Geriatrics and Gerontology research by significantly enhancing data analysis, systematic reviews, and clinical applications. However, its integration introduces challenges related to transparency, ethical considerations, and reproducibility. This study scrutinizes the approaches adopted by leading Geriatrics and Gerontology journals in addressing these challenges and leveraging opportunities through their author instructions and policies.

**Methods:** A cross-sectional review of the top 100 peer-reviewed Geriatrics and Gerontology journals, as ranked by the 2023 SCImago SJR indicator, was conducted. Data were meticulously extracted from each journal's "Instructions for Authors" to assess AI-related policies, encompassing AI-specific reporting guidelines, authorship criteria, and the utilization of AI in manuscript preparation and image generation. Correlational analyses were performed to explore the relationship between AI policies and various journal characteristics.

**Results:** Among the 100 journals evaluated, 28% explicitly addressed AI usage within their instructions, predominantly prohibiting AI authorship while mandating the disclosure of AI involvement in submissions. AI-generated content was sanctioned by 37% of journals, whereas 26% permitted AI-generated images. Notably, journals with higher impact factors were more inclined to incorporate detailed AI policies, although substantial gaps in standardization and guidance persist.

**Conclusion:** While numerous Geriatrics and Gerontology journals acknowledge the transformative role of AI in research, a minority endorse AI-specific reporting guidelines, thereby limiting the standardization and transparency of AI usage. It is recommended that comprehensive guidelines be adopted to ensure ethical, reproducible, and high-quality research in the era of AI-driven innovation.

**Keywords:** Artificial Intelligence, Reporting Guidelines, Geriatrics and Gerontology, Transparency, Authorship

Ethan Wood, BA, Kurt Mahnken, BA, Eli Oldham, BS, Taylor Gardner, BS, Mahad Chaudhry, BS, Brody Dennis, BS, Alex Hagood, BSN, Eli Paul, BS, Alicia Ito Ford, PhD, Matt Vassar, PhD

Ethan Wood, BA, Medical Student; ethan.w.wood@okstate.edu

### **Data Sharing Practices in Pediatric Journals: Current Trends and Future Directions**

**Introduction:** Data sharing is crucial in pediatric research due to the rarity of certain genetic diseases and the limited patient population. Enhanced transparency and reproducibility through data sharing can significantly benefit pediatric studies. Despite its importance, the extent and implementation of DSS in pediatric research remain underexplored. Therefore, we aimed to explore the current landscape of data sharing practices in pediatrics by assessing inclusion of data sharing statements (DSS) in ten of the top pediatric journals.

**Methods:** We conducted an analysis of articles published in ten of the top pediatric journals from January 2020 to December 2023. Data elements were extracted in a masked, duplicate fashion, using a pilot-tested Google Form, and hierarchical logistic regression was employed to analyze the statements, accounting for variability at the journal and publisher levels. Additionally, authors were contacted to assess their willingness to share data upon request.

**Results:** Of the 1,058 articles included in our study, 55.20% included a DSS. Hierarchical logistic regression analysis indicated significant variability with factors such as journal, publisher and study design influencing the inclusion of a DSS. Furthermore, thematic analysis revealed that a large portion of studies' data are protected by gatekeepers.

**Conclusions:** The prevalence of DSS in pediatric journals is increasing, yet significant barriers to effective data sharing persist. Most DSS involve a gatekeeper role, limiting direct data accessibility. Journal policies significantly influence data sharing practices. To improve transparency and reproducibility in pediatric research, efforts must address data sharing barriers and encourage the use of open data repositories.

**Keywords:** Pediatrics, Data Sharing, Research Transparency

Austin Young, BS, Von Gray, BS, Micah Hartwell, PhD

Austin Young, BS, Medical Student; austin.young11@okstate.edu

### **Analysis of the Reporting Status and Scope of Current Interventions for Pediatric Strabismus Trials within the National Library of Medicine**

**Background:** Pediatric strabismus (PS) is one of the most common conditions for referrals to an ophthalmologist, with a worldwide prevalence of nearly 6%. Untreated strabismus may lead to amblyopia and irreversible decreased vision. Research through clinical trials is necessary to advance treatment options, thus our primary objective was to assess PS trials using the CDC's Clinical Trial Database. Additionally, our secondary objective was to assess rates of PS trial discontinuation.

**Methods:** We performed a search of the U.S. National Library of Medicine's Clinical Trials Database (clinicaltrials.gov) on October 8, 2024, to capture interventional clinical trials that included children. We collated trials by completion status and reported rates of the type of strabismus assessed, intervention type, trial phase, enrollment, location, and funding source.

**Results:** Of the 204 trials returned from the search, 77 met the inclusion criteria. Of the trials, the most frequent type of strabismus examined was exotropia (32, 41.6%) followed by general strabismus (24, 31.2%), and esotropia (12, 15.6%) and the most common interventions used were surgical (33, 42.9%) and devices (22, 28.6%). Egypt had the most registered PS trials (21, 27.3%) followed by the United States (20, 26.0%). Of the included trials, only 3 (3.9%) trials had been discontinued.

**Discussion:** Our results showed that surgical interventions for PS were the most common intervention used and that few PS studies have been discontinued. Additionally, Egypt and the United States had the highest rates of registered PS clinical trials. Our study highlights the range of current clinical trials to help inform physicians and caregivers of individuals with PS.

**Keywords:** pediatric, strabismus, intervention

## NOTES

## NOTES



## **ACKNOWLEDGEMENTS**

### **Thank you to our Sponsors**

**OCAST**

**We would like to thank all our judges and reviewers for their contributions to this event.**

### **Additional Thanks**

Research Committee

External Affairs

Medical Library Staff

Department of Wellness

Graduate Programs

### **Special Thanks**

Research Office Staff



OFFICE OF  
**RESEARCH**  
OSU Center for Health Sciences