INNOVATIVE RESEARCH SYMPOSIUM

A CELEBRATION OF INNOVATIVE STUDENT RESEARCH

THURSDAY, APRIL 20, 2023

Fairfield University

APRIL 20, 2023 | TODAY'S EVENTS

10 A.M. – 4:30 P.M. VISUAL AND PERFORMING ARTS CAPSTONE EXHIBITION

Loyola Hall Galleries

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1 – 2:30 P.M. SESSION ONE

RecPlex Field House

3:30 – 5 P.M. SESSION TWO

RecPlex Field House

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5 P.M. CENTER FOR SOCIAL IMPACT END OF YEAR CELEBRATION

Kelley Center Presentation Room

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5 P.M. FAIRFIELD UNIVERSITY ART MUSEUM LECTURE

Diffley Board Room, Bellarmine Hall

7:30 P.M. SPRING JAZZ ENSEMBLE CONCERT

Gonzaga Auditorium

7:30 P.M. THEATRE FAIRFIELD PRODUCTION OF *EURYDICE*

Wien Black Box Theatre, Regina A. Quick Center for the Arts

Session One

CENTER FOR SOCIAL IMPACT

COLLEGE OF ARTS & SCIENCES

- Health Studies
- Humanities and the Arts
- Natural and Behavioral Sciences and Mathematics (Presented by Sigma Xi)
- Social Sciences

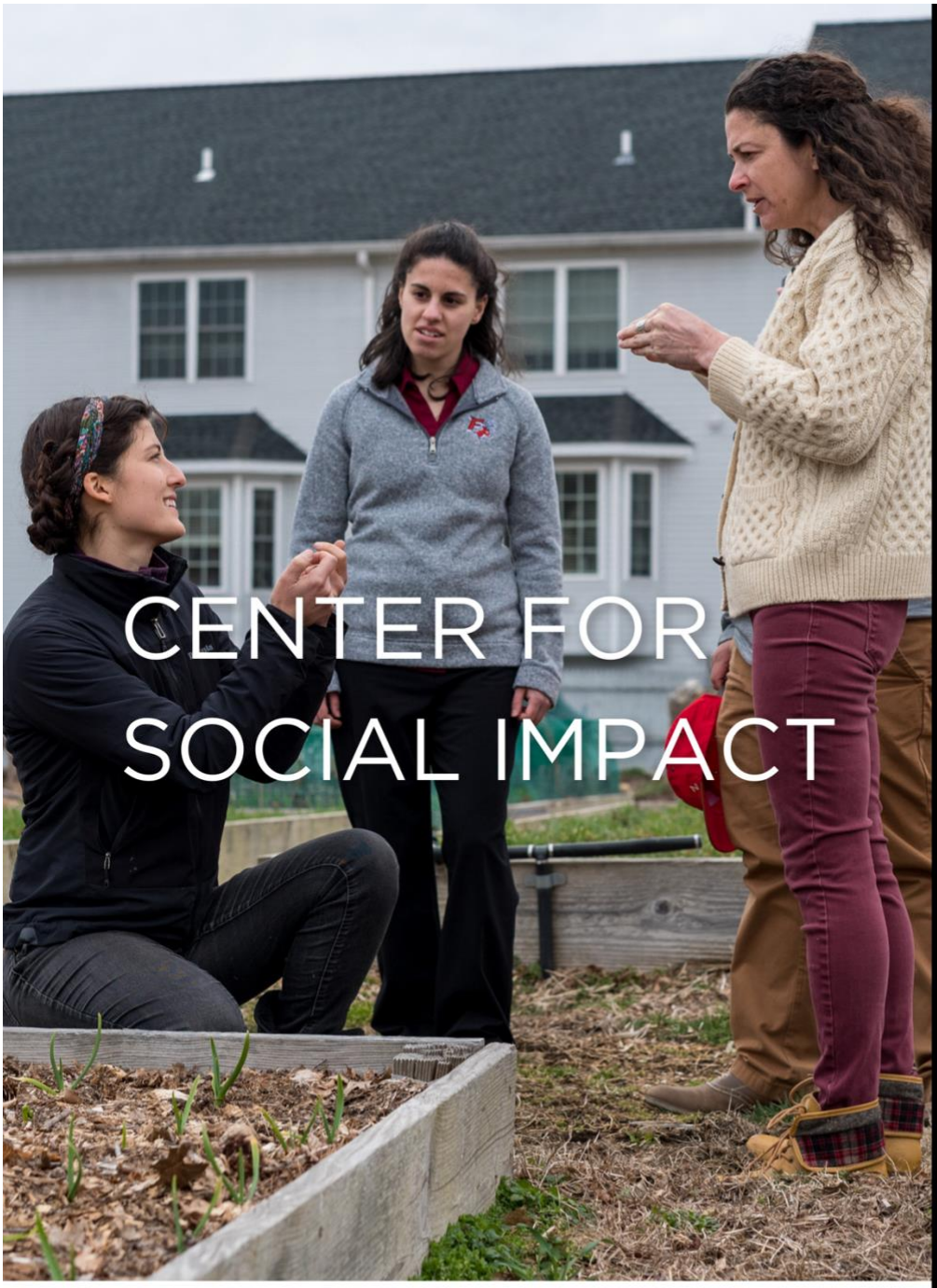
DOLAN SCHOOL OF BUSINESS

SCHOOL OF EDUCATION & HUMAN DEVELOPMENT

- Clinical Mental Health Counseling
- School Counseling
- School Psychology

SCHOOL OF ENGINEERING

- Graduate Research
- Senior Design Projects
- Summer Research Projects



CENTER FOR SOCIAL IMPACT

INNOVATIVE RESEARCH SYMPOSIUM

Fairfield University

Center for Social Impact

Community Agriculture Research: Raising Opportunity Together (CARROT)

Rishi Black, Melody Olivan Sanchez

Faculty Mentors: Dina Franceschi, Reinaldo D. Gonzalez Rodriguez, Scott Lacy, Melissa Quan

Booth: 32

Track: Social Justice and Environment and Sustainability

This research was also presented at *Green Village Initiative's 2022 Harvest Fest, Fairfield University's Social Justice in the Humanities Colloquium*

This research was supported by the McGuinness Mentorship Program

Abstract:

Community Agriculture Research: Raising Opportunity Together (CARROT) is a collaboration between the Green Village Initiative (GVI) and Fairfield University (FfldU) that works to promote sustainable, urban agriculture through research. Green spaces in urban environments provide a broad payback to the neighborhoods and communities in which they reside. Adapting a framework utilized for open space and parks valuation, this project characterizes the ways that community gardening provides health and wellness to those that live in the city of Bridgeport. Community Gardeners are essential to the research. Their contributions help us to understand how much work gardeners put into their plots and how much they produce.

Advocacy Through Narration: A Refugee's Perspective

Katherine Peterson

Faculty Mentors: Janie Leatherman, Julie Mughal

Booth: 37

Track: Interdisciplinary Studies

Abstract:

According to the UNHCR, at the end of 2021, an estimated 89.3 million people were forcibly displaced around the world, 27.1 million of which are refugees. Despite this large population of displaced people, their stories and perspectives are rarely told. When they are told, however, the story has the power to draw the attention of society and help encourage activism toward the refugee crisis. Specifically, literature has become a great tool for people to gain a better understanding of the refugee crisis, enabling refugees to share their own perspective. Through connecting with the story of a refugee, readers are more compelled to feel empathetic toward those who are enduring such hardships. Overall, the impact that refugee literature and narration can have is essential to raising awareness and aiding the many people who are unfortunately victims of the ongoing crisis.

Report On StreetSafe Bridgeport

Nya Jones

Faculty Mentor: Mehmet Cansoy

Booth: 38

Track: Community-Engaged Learning and Interdisciplinary Studies

Abstract:

Given the rise of gun violence in Bridgeport, assessing the StreetSafe program, run by the Regional Youth Adult Social Action Partnership (RYASAP) since 2014, and its potential to address the violence is critical. In this report, we offer an initial assessment of the program designed with four objectives. (1) Identify the patterns in StreetSafe's work (interventions, employee training, community partners, and definitions of success) in the context of interviews with key staff members and qualitative analysis of case notes from 2021 and 2022 produced by outreach workers, (2) to evaluate to what extent StreetSafe's interventions align with current best practices in the literature on community-based and youth violence intervention programs, (3) to highlight the program's overall holistic approach to gun violence, (4) to make recommendations that would not only strengthen StreetSafe's ability to engage with this vital work but to show the measurable effectiveness of their program.

The Importance of Communication: A Review of Emergency Food Response During the COVID-19 Pandemic

Cassandra Reilly, Allison Carignan, Leah Sullivan

Faculty Mentor: Deborah List

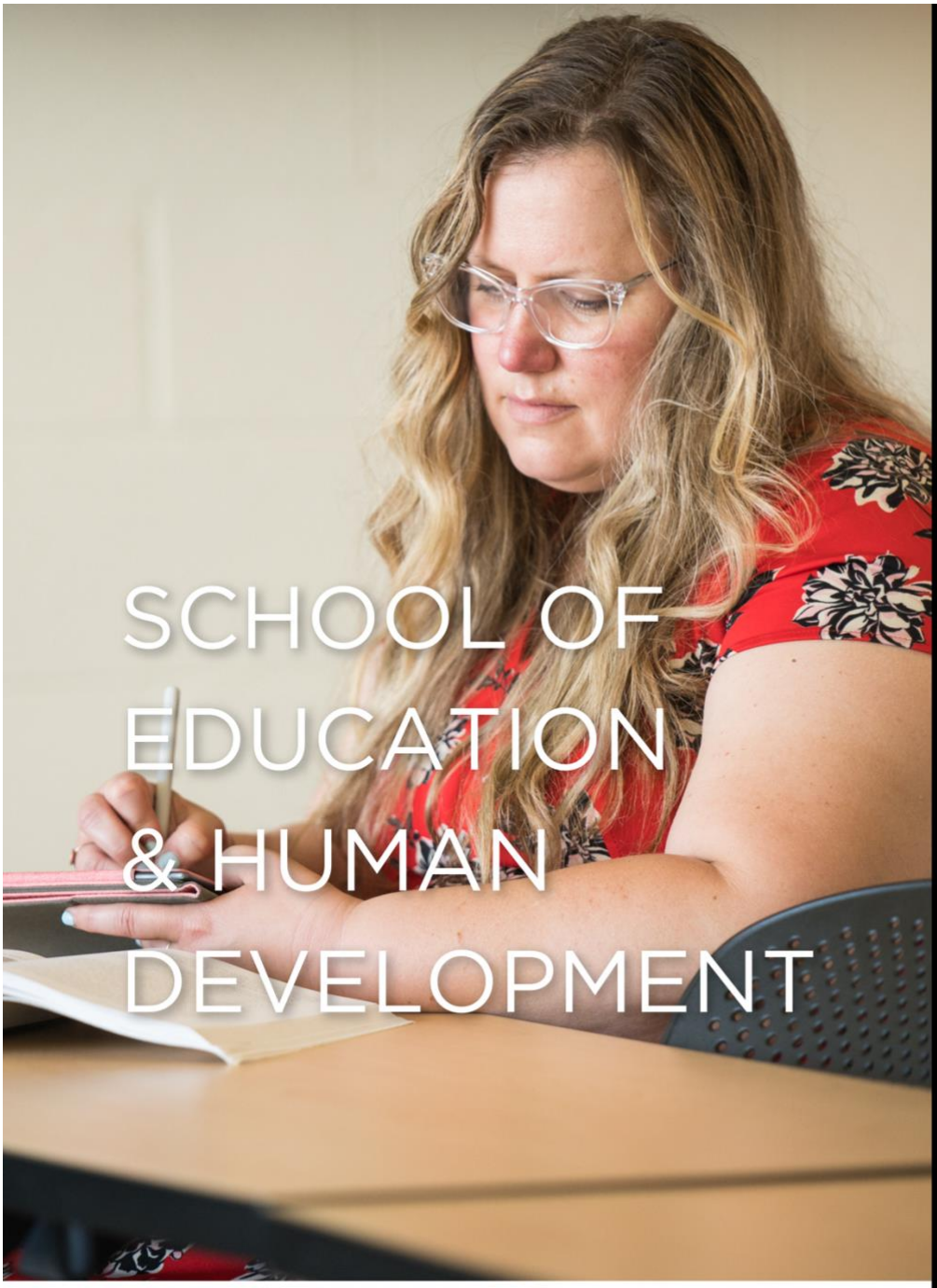
Booth: 44

Track: Community-Engaged Learning and Social Justice and Interdisciplinary Studies

This research was also presented at *Connecticut Public Health Association*

Abstract:

This study focused on policy makers and disaster response on local, regional, and state levels in relation to food distribution and insecurity during the pandemic. Structured interviews were conducted with major players involved, questions in these interviews were directed at uncovering organizational hardships and gaps in communication. These interviews were analyzed using a coding system to identify recurring themes. Results show differing views at the local and state levels, while individuals on the same level elicited similar themes. The biggest takeaway of the study was the importance of communication, both vertically and horizontally. Horizontally, communication allowed for local leaders to form relationships and strengthen the distribution process within communities. Vertically, the local food distributors struggled due to infrastructure constraints that the state departments were seemingly unaware of. The breakdown in communication was the source of many problems in terms of food access and quality during the pandemic. The research resulted in a core competency model; placing communication, coordination, assurance, prevention and assessment at the forefront for success. Improvements in leadership from participants at all levels were identified as a key change to implement for Connecticut to be better prepared to respond to food insecurity crises in the future.



SCHOOL OF EDUCATION & HUMAN DEVELOPMENT

INNOVATIVE RESEARCH SYMPOSIUM

Fairfield University

School of Education & Human Development

Ecological Grief: A Rising Trend and its Implications on Mental Health

Michael Izdebski, Stephen Osika

Faculty Mentor: Dilani Perera

Booth: 1

Track: Environment and Sustainability

Abstract:

Ecological grief, also called climate grief, is a deleterious psychological response to the present and predicted changes to the environment on one's own life and the world as a whole. It presents simultaneously as an existential grief and a concern over more tangible aspects of their life, especially future loss. The term is recent but is expected to become more widespread and severe as the effects of climate change worsen with time (Cunsolo & Ellis, 2018). In our research, we found a few major elements of note. First, individuals experiencing ecological grief can concurrently experience a trauma or stressor disorder, depression, or anxiety stemming from this grief (Padhy et al., 2015). Second, these individuals often feel that their plans for life have been impacted or restricted by the expected changes to their environment, going so far as to not wanting to have children. Lastly, individuals in underprivileged communities are predicted to be more severely impacted by climate change, and it follows that the climate grief will exacerbate if such negative environmental events do occur—a term called cascading ecological grief (Cunsolo et al., 2020)—including loss to both lifestyle, cultural traditions, and life itself.

Social Anxiety in College Students: Symptoms, Effects, and Treatment Considerations

Paul Sundman, Brendan Osler

Faculty Mentor: Dilani Perera

Booth: 2

Abstract:

College is a unique time in the lives of many adolescents and young adults. It requires significant adjustment as students navigate having more responsibilities, studying more independently, and often living away from home for the first time. Even at subclinical levels, social anxiety can profoundly impact these students not only in terms of their social and emotional adjustment in college, but also in other domains such as academic achievement. In addition, there is a heightened risk of students with higher levels of social anxiety developing co-occurring substance use disorders. University counselors are in a unique position to help students with social anxiety, as they are located on campus and often do not require insurance or extra payment, which may have otherwise limited students from receiving the care that they need. However, these same counselors face challenges such as only seeing students for a limited number of sessions, having high caseloads, and not seeing students for prolonged periods during breaks from school. Still, there are research-supported and short-term counseling modalities that can vastly reduce students' levels of anxiety. This poster presents current research about social anxiety in college students, including factors that exacerbate it, its effect on their daily lives, maladaptive safety behaviors such as alcohol misuse, and what college counselors can do to help.

Bi/Multilingual Learners: Identifying Trauma, Support Strategies, and Mental Health Literacy

Janae Staltaro

Faculty Mentor: Dilani Perera

Booth: 3

Abstract:

This research investigates the presentation of trauma in Hispanic bi/multilingual learners, strategies to support this population, and the basics of mental health literacy. Commonly referred to as English Language Learners—or simply, English Learners—these students are one of the fastest-growing populations in the United States K-12 school system. In addition to needing to quickly obtain a second or third language, these students are often disproportionately affected by multiple types of trauma. This research seeks to present the current literature on how to identify trauma as it relates to this broad population, suggest strategies to help these students succeed, and define mental health literacy through a cultural lens.

Specific Learning Disability in Written Language: Characteristics and Implications for Educators

Rhiannya Byrne, Isabella DelVecchio

Faculty Mentor: Evelyn Bilias Lolis

Booth: 4

Abstract:

"Invisible" disabilities like specific learning disabilities can impact teaching and learning in K-12 and higher education settings. This presentation will offer an in-depth exploration of how a specific learning disability in written language manifests itself in the higher education classroom. Participants will gain a deeper understanding of the features of a writing disability, including its brain-based characteristics and accommodations in the college classroom. Implications for instruction, as well as tips to facilitate educator understanding and support, will be provided.

Intuitive Eating Intervention on BIPOC Adults with Mild-to-Moderate Disordered Eating

Tasha Mehne, Brian Dolan

Faculty Mentor: Jocelyn Novella

Booth: 5

Abstract:

Intuitive eating (IE) is an evidence-based, weight-neutral model that helps individuals to learn (or re-learn) to trust the connection between physiological hunger and satiety cues and to eat in response to these cues. A growing body of research suggests that intuitive eating may be a potential treatment for individuals with disordered eating, restrictive eating, and eating disorders. We found that the samples used in the majority of IE studies, however, consist primarily of white, middle-to-upper class, college-age females. In examining the current literature, we sought to determine reasons for this research gap surrounding IE as a treatment among Black, Indigenous, and people of color (BIPOC) populations with disordered eating and eating disorders. Our work discovered a major bias shared by many medical doctors and mental health professionals alike: that BIPOC individuals do not experience disordered eating and eating disorders to the same extent as white individuals do. In fact, the risks between both groups are equivalent. We recommend that medical and mental health professionals receive further education on IE as a treatment option for BIPOC clients with disordered eating and recommend further scholarly attention to this subject.

Ensuring the Safety and Well-being of Minors: Ethical Considerations When Breaking Confidentiality

Eric Zeitler

Faculty Mentor: Jocelyn Novella

Booth: 6

Abstract:

The focus of this research was to explore the topic of client confidentiality with minors and the circumstances under which it may need to be violated. It delves into the historical evolution of minors' rights, the relevant standards outlined in the 2014 ACA Code of Ethics, scenarios where a counselor may be required to breach confidentiality, and current research exploring what other professionals have done or would do in this area.

Office of Accessibility Student Ambassadors

Isabella DelVecchio, Madeleine Babcock, Celina Lennon, Amanda Marino, Christopher "Tripp" Lyons, Gwyneth Bozentka, Kayle Christie, Jenna Innaimo

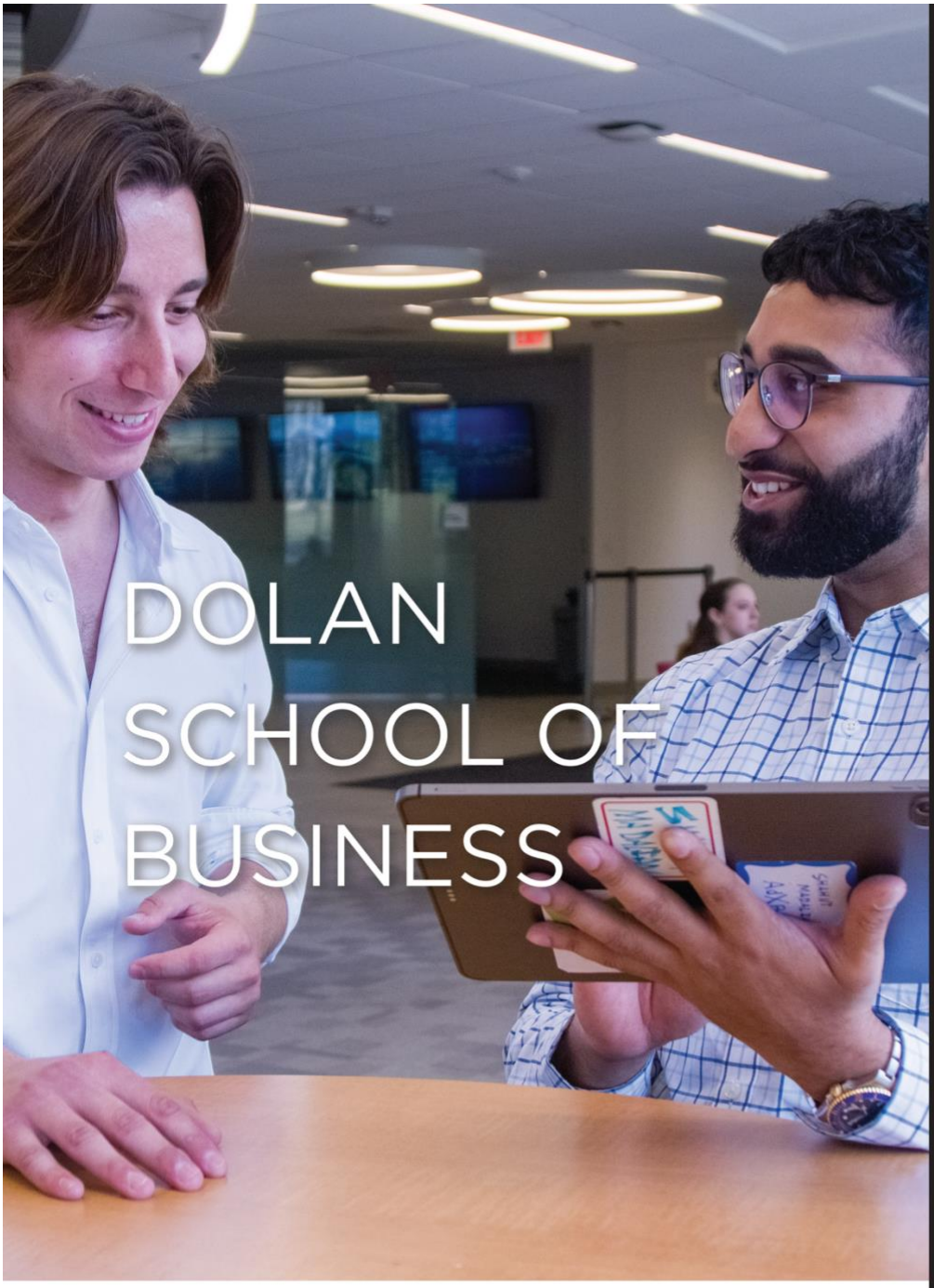
Faculty Mentor: Megan Buxton

Booth: 7

Track: Community-Engaged Learning

Abstract:

The Office of Accessibility Student Ambassadors is a group of Fairfield University students dedicated to increasing accessibility and inclusivity on campus. Launched by the Office of Accessibility and led by graduate assistant Isabella DelVecchio, the group initiates partnership with as many campus members as possible to advocate for student needs, promote disability awareness, and endorse Universal Design. The Office of Accessibility Student Ambassadors are committed to an accessible educational experience for all students. They invite all who have an interest in equitable education to learn about their efforts and join them in their mission.



DOLAN SCHOOL OF BUSINESS

Fairfield DOLAN

INNOVATIVE RESEARCH SYMPOSIUM

Enhance the Food Safety Definition and Index in Sub-Saharan Africa

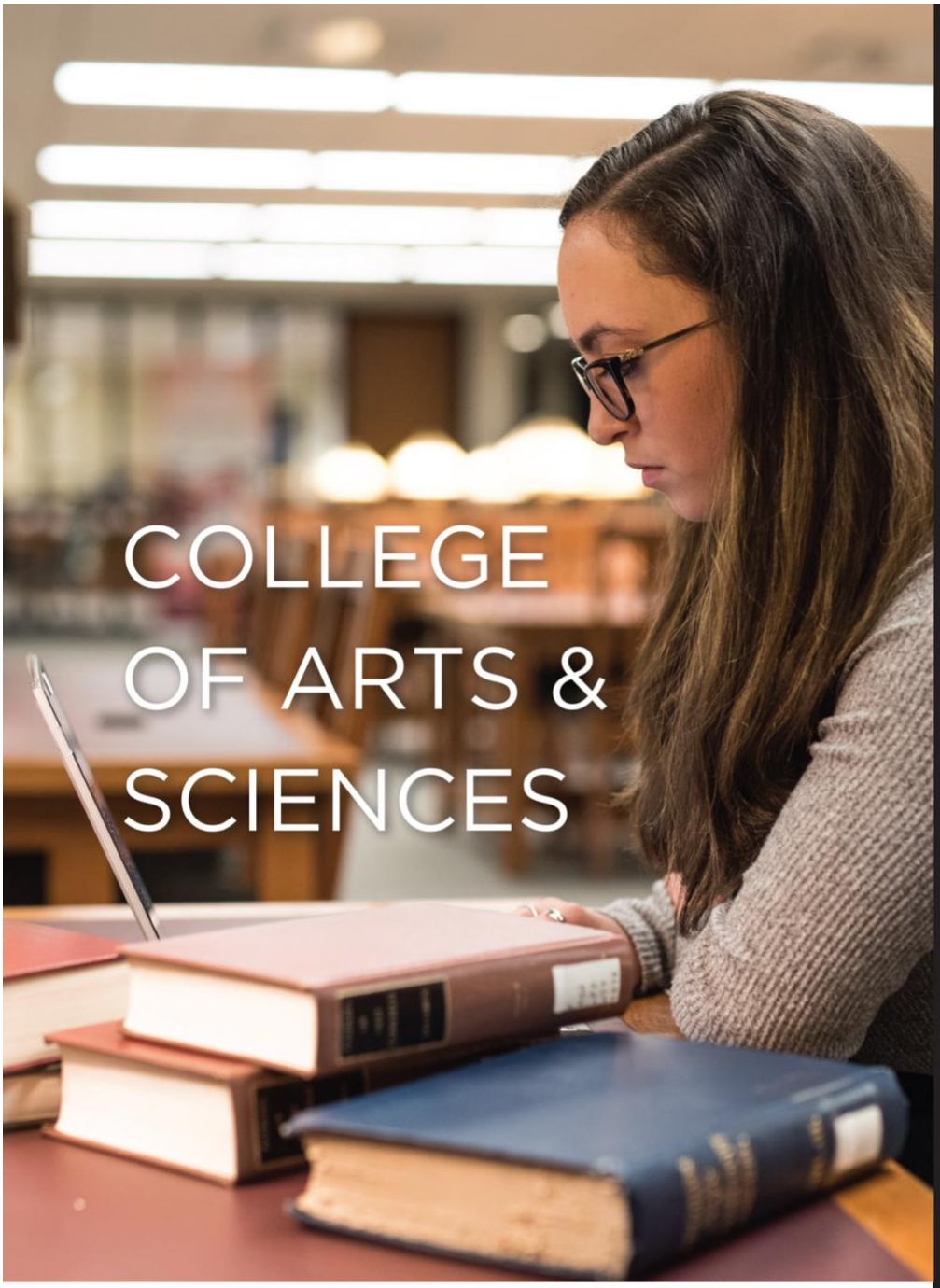
Zachary Painchaud, John Held, Cameron Turner, Matthew Kolotylo, John Martin

Faculty Mentor: Vishnu Vinekar

Booth: 8

Abstract:

This project develops and enhances a food safety index for Sub-Saharan Africa. We study this using multiple variables such as GDP, crop and livestock products (including agriculture, manufacturing, and imports), foreign direct investments, emissions, and other relevant factors. By doing so, we will determine which factors have the greatest effect on food safety. Our Food Safety Index defines food safety as a country's ability to maintain a stable and nourishing food resource and breaks it into four factors: 1) affordability and accessibility, 2) availability, 3) quality and safety, and 4) sustainability and adaptability. The construction of the model began with researching projects performing similar studies. The sources for our data were The Economist, FAOStat by the Food and Agriculture Organization of the United Nations, and the Global Conflict Risk Index. We build our own index by enhancing The Economist's food security index. We then run multiple linear regressions on to see what variables significantly affect food security/insecurity in Sub-Saharan African countries. We utilized FAOStat to construct a master dataset to work alongside our index. We used the programming language R and its pivot wider function to separate rows into columns and then proceeded to use left joins to join each dataset into one cohesive master dataset. We are using RapidMiner to model regressions to answer our research questions.



COLLEGE OF ARTS & SCIENCES

INNOVATIVE RESEARCH SYMPOSIUM

Fairfield University

College of Arts & Sciences

When Fighting with “Monsters”: Reimagining American Society’s Response to Crime

Peter Baron

Faculty Mentor: Elizabeth Petrino

Booth: 9

Track: Social Justice and Interdisciplinary Studies Writing Across the Curriculum / Within the Discipline

This research was also presented at Johns Hopkins John R. Macksey Undergraduate Symposium

This research was supported by the Humanities Institute Student Fellowship

Abstract:

In this project, I will argue that the relationship between good and evil is much more nuanced than the commonly accepted perspective that pits them as absolute opposites. I aim to demonstrate that adopting this reductionist, “opposites perspective” regarding good and evil leads to socially, psychologically, and spiritually harmful consequences. The project will begin by turning to psychology, philosophy, and poetry to investigate the nuance in what we label good and evil. Next, by extracting and synthesizing wisdoms from ancient Taoist and Buddhist philosophy and American Transcendentalism, this interdisciplinary project aims to identify the ego as illusory while exploring the destructive social consequences of attachment to the ego. The project will point the reader to the poetry of John Keats—specifically his concept of negative capability—to explore how an individual might live with the mystery and doubt that arises after one recognizes the illusion of the ego. Taking a collective angle, I then evaluate the usefulness of spiritual exercises (such as transcendental meditation) as well as the potential contemporary applications of ancient folktales in identifying methods for resolving small and large-scale conflict through compassionate and peaceful means. The paper ends with an examination of social science research to consider the feasibility and benefits of advocating for ego dissociation and compassionate conflict resolution in society. To do so, I will highlight the effectiveness of restorative justice and similar initiatives both abroad and at home in the United States.

Viking Age Magic in Westeros: A Reading of Transgression in George R.R. Martin's A Song of Ice and Fire

Francis Nicolas

Faculty Mentor: Jerelyn Johnson

Booth: 10

This research was also presented at Johns Hopkins John R. Macksey Undergraduate Symposium

This research was supported by the Humanities Institute Student Fellowship

Abstract:

I am studying Old Norse literature, primarily sourced from the literary canon, in order to understand the transgressive quality of magic within the Viking worldview, to show that author George R.R. Martin's "A Song of Ice and Fire" writes certain magical characters in much the same way. I argue these characters' literary precedents, specifically those found in Viking, or Old Norse literature, demonstrate the way in which they are portrayed in "A Song of Ice and Fire". Specifically, the portrayal of certain magical characters in Martin's book series parallels closely the perception which the Vikings had of their own magic-users, as seen in their literature. This can be seen in the case of those known in the series as skinchangers, people who possess the ability to project their consciousness into the body of an animal, and are ostracized by their community because of it, albeit with a grudging respect. The Vikings, whose worldview likely understood human shapeshifters as being real, regarded their own skinchangers in much the same way. The Vikings saw many of these magic-users as morally perverse for this fluid identity, as these magic-users challenge the traditional understanding of what it means to inhabit a body. Therefore, the characterization of skinchangers in George R.R. Martin's "A Song of Ice and Fire" can be viewed with this Viking context in mind, which is key to understanding how they function as essentially subversive beings.

Polychromy of Parthenon Metope Blocks: Color Proposals

Maia Nolan, Michael Corbett, Caitlin Roder, Phoebe Charpentier, Eleanor Bernholz, Julia Higgins

Faculty Mentor: Katherine Schwab

Booth: 11

Abstract:

The goal of studying ancient polychromy, or the use of many colors, is to attempt to understand how statues from antiquity may have looked and discover ways to bring their vibrancy back to life for current understanding and future interpretation. In antiquity marble statues and architecture were vibrantly painted. Through chemistry and archaeology, art historians have begun to uncover evidence of minerals denoting color. The Fall 2022 Historic Plaster Cast Seminar set out to study and produce color proposals for three metope blocks from the Parthenon in Athens. Students researched and developed proposals using other artworks, peer-reviewed journals and creative logic. In order to bring these proposals to life, watercolors were used on small-sized plaster casts made from 3D scans of Parthenon metopes.

Sacred Conservatism: Understanding the Modern Republican Party as a Religion

Madeline Hossler

Faculty Mentor: Lydia Willsky-Ciollo

Booth: 12

Track: Social Justice and Interdisciplinary Studies

This research was supported by the Humanities Institute Student Fellowship

Abstract:

This project will argue that the most effective paradigm for understanding the modern Republican party is to view it as a religion. This project synthesizes existing scholarship into a five-part definition of religion: discourse of truth, authority to define practice, identity shaping activities, exclusive community, and purpose driven institutions. Together, these pillars emphasize the social functions of religion - exploring how members relate to each other, their leadership, and the world around them. Additionally, this project draws from theories of party asymmetry, political peoplehood, and executive power to explain the forces that allowed the Republican party to take on the attributes of a religion. President Trump is framed not as a rejection of Republican norms, but rather the culmination of the roughly fifty years of party evolution that produced this religion. The story of the Republican religion finds its origins in the Nixon and Reagan administrations, was modified and perpetuated through the administrations of George Bush and George W Bush, and solidified under the administration of President Trump. This is an interdisciplinary project that combines religious studies with work on American political development and American political behavior to argue not just that a Republican religion exists, but that it provides an explanation for the trends defining the current political moment.

Apollon Digital Journal

Jacqueline Rigazio, Jenna Codey, Finn Collins, Erin Delaney, Peyton Mulligan, Sophia Spinelli, Lauren Behrens, Madeline Hossler, Jarred Nowak, Emma Paolantonio, Lisa Wilson

Faculty Mentor: Marice Rose

Booth: 13

Track: Interdisciplinary Studies Writing Across the Curriculum / Within the Discipline

Abstract:

Mission: At Apollon, we strive to publish superior examples of undergraduate humanities research from a variety of disciplines as well as intellectual approaches. Our goal is to engage students in every stage of the process, beginning with student-faculty collaboration in generating undergraduate scholarship and finishing with the release of a polished digital journal. Apollon strives to take advantage of the unique opportunity of venturing into the digital humanities by engaging with image, text, sound, video, and a variety of presentation platforms in the process of showcasing the many species of undergraduate research. Our name Apollon is derived from the Greek and Roman deity, Apollo, while the spelling more closely follows the Greek transliteration. Apollo is the god of music, poetry, art, light, and knowledge, making him one of the most complex deities in the Pantheon. In tribute to his multifaceted existence, our journal utilizes various media to create and reproduce knowledge within the humanities and to encourage critical thinking through multidisciplinary inquiry. With Apollo as patron to our musings and his Muses as inspiration for our content, Apollon seeks to provide our readers with thought-provoking, innovative ideas that explore the depth and breadth of humanistic inquiry. This is an online publication so cannot be in the digital repository right now, we are working with the library on options.

Senior Film, TV and Media Arts Major Capstone: 'Separados' Short Film

Diego Brijaldo

Faculty Mentor: Meryl O'Connor

Booth: 14

This research was supported by the Lawrence Family Fund

Abstract:

Film, TV, and Media Arts Majors take a year-long research course in which they envision and produce a creative work that pulls together the theoretical concepts and technical skills acquired during their years in the program. Senior Diego Brijaldo '23 began his research in the spring of 2022, where he studied the topics of immigration, maternity, and depression in order to develop a script for a short film. In the fall of 2022, he completed production on his short film “Separados”. Based on real events, “Separados" tells the story of a mother who almost dies giving birth and dreams about being with her son who was taken away from her. This short film will be showcased at the 2023 Fairfield University Cinefest on April 27th in competition against other films.

To Be or Not to Be a Feminist: Ophelia, Katherine, and the Expanding Ideals of Feminism

Lillian Snyder

Faculty Mentors: Nels Pearson, Shannon Kelley

Booth: 15

Abstract:

Shakespeare's Hamlet (1600) and The Taming of the Shrew (1591) produced two iconic female characters: Ophelia and Katherine. For nearly four centuries, most readers and critics refused to look past the premodern context in which these women were written-- a context in which they were never meant to have a progressive, neofeminist voice. However, looking at them through a modern perspective allows their impact to become more and more relevant. Female writers of the past few decades have given these women new relevance while also highlighting the importance of their circumstances, positions, and fates. By looking into the context in which Ophelia and Katherine were written as well as the context in which they are read, I argue that with the times perspectives have changed as a result of the beginnings of feminist thought and theory as started by women such as Mary Wollstonecraft continuing through revisionist readings by authors such as Sandra Fischer and Sarah Beckwith. This is shown in the comparisons and contrasts between modern readings and also in critiques by women writers at the time of Shakespeare. These few women writers amongst the many men help give perspective as to what people thought of Shakespeare and his characters during his time and why they felt that way before the earliest ideas of feminism were officially published.

Spanish Tourism: The Foundation of the Spanish Economy

Isabella Lanzarini

Faculty Mentor: Sergio Adrada Rafael

Booth: 16

Abstract:

Spain, a country recognized for its natural beauty and rich history, has an economy whose foundation is based upon the lucrative and advantageous industry of tourism. The concept of tourism originated in the nineteenth century and has continuously been a critical contributor to the global economy as a whole, but especially for Spain. In the context of Spanish tourism, the industry is designed to take advantage of the versatile geography, complex history, and distinctive culture that Spain has to offer; this includes its diverse cities, beautiful landscapes, and significant historical monuments. By profiting from the cultural, natural, and historical assets of the country, Spain has gained economic and political relevance in the global economy. Furthermore, this research also highlights the impact of the COVID-19 pandemic, and how modern-day sustainability efforts contribute to the ever-changing image and dynamic of the tourism industry.

The Impactful Relationship Between Unionism and Politics in Spain Over Time

Alexandra Emanuel

Faculty Mentor: Sergio Adrada Rafael

Booth: 17

Abstract:

This paper investigates the history of trade union federations in Spain. Given that the various governing bodies and political alignments in Spain have had a great impact on its union movement, the research begins with union formation during the 1870s and extends throughout Franco's Regime until today. Additionally, it compares the development of Spanish unions to those in the United States to emphasize the powerful political influence that was far more present in Spain than in the United States. Moreover, the purpose of this work is to demonstrate how Spanish Labor Unions like the General Union of Workers (Unión General de Trabajdores, UGT), National Confederation of Labor (Confederación Nacional de Trabajadores, CNT), and the Workers' Commissions (Comisiones Obreras, CCOO) as well as the Spanish Government influenced each other in the face of political change.

The Loss of Indigenous Languages: Why and How to Save Them

Grace Magilligan, Ashley Devlin

Faculty Mentor: Sergio Adrada Rafael

Booth: 18

Track: Writing Across the Curriculum / Within the Discipline

Abstract:

Language is the way human beings communicate and share their cultures and how centuries of history survive in our ever-changing contemporary world. Indigenous languages have lost their relevance and use in recent years as a result of modern developments. Therefore, it is salient that we investigate which languages are disappearing, why, and how it can be addressed. Our investigation began by conducting a search about the death and disappearance of languages overall. However, after analyzing numerous articles we observed that the most significant theme to evaluate was the disappearance of indigenous languages. In order to discover the reasons why indigenous languages were dying and how institutions and individuals can contribute to saving them, it was imperative to probe deeper into peer-reviewed scholarly research that addressed this topic. Through this process, we aimed to fully understand the gravity of the situation, as well as to provide recommendations necessary to save languages that are losing their prevalence in today's society. Following the investigation of the accelerating rate of the extinction of indigenous languages, it is clear that society needs to focus on the preservation of these languages for the following reasons: contributions to ethnic diversity, preservation of history and culture, maintenance of specialized knowledge, and the rights of indigenous language speakers.

50 out of 500: Why Women Lack Representation in the Leadership of High-Powered Companies

Katharine Edwards

Faculty Mentor: Shannon Kelley

Booth: 19

Abstract:

Women occupy CEO positions in only 10% of Fortune's top 500 companies. This isolated statistic is a signifier of the deep-rooted inequities for women in business. This project aims to look historically at the underlying reasons for women's lack of representation in leadership positions, followed by an analysis of the challenges that the few women who enter into these positions face today. Through case studies of the women who occupy these positions at high powered companies, it brings to light the truth about where America is today when it comes to women in the workplace. This research project collects data to clearly draw the conclusion that while women are accepted into the workplace, they are not trusted in positions that possess high power and influence. The only women who occupy these positions are required to be near perfect, a standard much higher than that set for men in similar positions. While equity is claimed by some, it is more important now than ever to analyze the differences between "perceived" equity, and actual equity. While women have made strides in the workplace, the research in this project suggests there is a very long way to go to achieve equality.

In Their Element(s): Women Artists Across Media

Phoebe Charpentier

Faculty Mentors: Shannon Kelley, Annemarie Iddins

Booth: 20

Track: Community-Engaged Learning and Social Justice

This research was supported by the Humanities Institute Student Fellowship

Abstract:

Over the past decade or so, many art institutions and scholars have begun to reconsider the talent and impact of women artists whose art had so long been ignored, diminished, and forgotten. It is so important that historically neglected women artists are recognized for their contribution to the field. However, contemporary critiques have emphasized the necessity of avoiding essentialism, which is the idea that all women artists have some innate similarity that can be displayed purely by putting their work on the wall. Women artists are first and foremost artists. In the context of an art museum, their work should be viewed primarily as a work of art rather than a woman's work of art. "In Their Element(s): Women Artists Across Media" displays the work Fairfield University Art Museum has collected by women artists, placing focus primarily on their contributions to certain traditions in various media such as oil and acrylic painting, plaster, aluminum, collage, ceramic, and many more unique materials. Including artists from the 1960's to today such as Miriam Schapiro, Laurie Simmons, Ester Hernández, and Sonya Clark, the exhibit is designed to celebrate the wide variety of work contemporary female artists have contributed to the art historical canon.

Enhancing "Apollon," a Digital Journal for Humanities Research

Phoebe Charpentier

Faculty Mentor: Shannon Kelley

Booth: 21

This research was supported by the McGualey Family Faculty Student Research Fund

Abstract:

My research project, which lasted from June through August of 2022, was centered on the web development of “Apollon,” an undergraduate humanities research journal published online. I worked with Google Analytics 4 to run various reports on user engagement within our website and addressed ways we can increase submissions to our journal. I also wrote a copyright agreement which submitting authors must sign in order to ensure proper licensing of their work. For future editors, I created a “Social Media Best Practices” guide and a guide to Google Analytics 4 for their reference. Lastly, I formatted and published two e-books for the most recent editions of our journal. Dr. Kelley also invited me to attend meetings with our website designer as we have been rebranding our site. This way, I was able to provide student feedback on the functionality and look of our website. Our brand-new website can be found at www.apollonejournal.org.

Challenging Patriarchal Traditions in Christianity

Taylor Richitelli

Faculty Mentor: Shannon Kelley

Booth: 22

Track: Social Justice and Interdisciplinary Studies

Abstract:

Throughout history, women have been limited to the private domestic sphere. They are excluded from participating in the public sphere through legislation and socially discouragement. Leaders in the mainstream public sphere hold the most influence over society because this is where meaningful roles reside that result in impactful decisions. A major area of the public sphere that has contributed to women's exclusion and limitation of influence in mainstream society is that of traditional Abrahamic religions, such as Christianity. Christianity did not always involve the exclusion of women's participation. However, as it developed around a patriarchal society and became more institutionalized, women began to lose positions they had held for centuries while men dominated leadership opportunities and decision-making in the church. This was due to androcentric interpretations of biblical texts and complementarianism ideology used as an argument against women's religious involvement and leadership. The sexism seen in the church aligns with sexism in overall society as socially-constructed cultural scripts characterized women as being biologically suited for domestic duties rather than public positions of influence. Women continue to challenge patriarchal traditions in Christianity through criticism of androcentric discourse, feminist theologies, and activism as they fight for inclusivity and equality in religious spaces and church leadership.

The Exploitation of Women's Bodies Within the Korean Popular Music Industry

Genuine Skill Salcedo

Faculty Mentor: Shannon Kelley

Booth: 23

Track: Interdisciplinary Studies

Abstract:

The objectification and hypersexualization of female artists in the Korean popular music industry, better known as K-pop, has intensified within the last decade. Traditional, mainstream Korean definitions of femininity call for women and girls to appeal to the male gaze through body policing, both external and internal. As a result, it is common for female trainees and artists to go on extreme diets and undergo plastic surgery in order to fit the Korean standard of beauty. After they debut, female Korean artists face intense scrutiny. They are largely under androcentric (or male-dominated) management and creative teams, leading to more body policing and less agency. They are often forced to objectify and sexualize themselves in their music videos and songs to maximize profit for the K-pop industry. Contrasting paragons of Korean femininity (e.g., BoA) to paragons of Korean masculinity (e.g., Rain) reveals how violating either has different consequences for female and male K-pop artists. Some may say that female K-pop idols are the embodiment of sex positivity or exercising powerful, post-feminist agency. Nevertheless, the K-pop industry has provided the means to the regressive exploitation of women's bodies.

Women in the Art World

Clare Toman

Faculty Mentor: Shannon Kelley

Booth: 24

Track: Social Justice and Interdisciplinary Studies

Abstract:

Art museums across the world are filled with artistic interpretations of the female body while simultaneously featuring dramatically few works by women artists, with even fewer works by women artists of color. In recent years progress has been made to increase the presence of women in the museum curatorial field, but female artist representation in museum collections remains extremely limited. This contrast is especially notable considering how many artworks by men feature nude women, promoting the idea that women are for visual consumption rather than equally skilled and artistically capable. I intend to analyze the presence of women in the museum field through statistics as well as through the collections of famous museums and public statements made by museum representatives, female artists, and feminists.

Inequality and Women in the Workforce

Allison Naeris

Faculty Mentor: Shannon Kelley

Booth: 25

Abstract:

In the corporate workforce in the United States today, there is still no equality between males and females. Women still deal with inequality through the gender pay gap, discrimination, and daily interactions within a workplace. Even though we see women working in the corporate world and having high ranks, there is still an underlying notion that they should not be there, which stems back to underlying beliefs developed in the nineteenth century known as the "Cult of True Womanhood." This project examines how Donna Bobbitt-Zeher, Robin Bleiweis, and Andrew Chamberlain propose that inequity persists due to discriminatory practices including the Cult of True Womanhood. It also addresses the work of Nancy F. Cott, who explores a more historical role in women's oppression in the work force. Ultimately, women's work force oppression will not end until we understand and eliminate the outmoded ideals presented by the Cult of True Womanhood.

Slouching Towards Kyiv: The Geopolitical Quagmire in Ukraine

Thomas Lane

Faculty Mentor: Silvia Marsans-Sakly

Booth: 26

This research was supported by the Humanities Institute Student Fellowship

Abstract:

The common Western perception of the modern Russo-Ukrainian conflict is that of an insidious campaign by an unjust, expansionist Russian regime led by a megalomaniac seeking to regain Soviet-era glory at the expense of a young, fragile, and pristine Ukrainian democracy. It is true that the present Russian invasion constitutes a gross violation of international law, but the narrative that unchecked Russian imperial ambition is the sole cause of the war is reductionist and misleading. Western money, weapons, and political support funneled through NATO have poured into Ukraine since and arguably before February 24, 2022; without these resources, a Ukrainian military victory is unthinkable. Western media keenly simplifies the war into a battle of good versus evil that must be won at any cost and to the last Ukrainian, but this narrative ignores a history of nationalism and imperialism on both sides.The sentiment that inspires the brutality of the battles raging in Ukraine does not arise only from the antipathy between the two populations, but from this Western aid, the narrative that enables it, and the often dismissed threat perception of the Russians. The mainstream Western media narrative about the war aims at maintaining pressure on Russia via a Ukrainian victory that imposes terms to ensure continued Western dominance in the region. The same policies considered to have restored unity to a politically and socially fractured West has simultaneously fueled a level of bloodshed unseen in Europe since the Second World War, and may imperil the prospect of peace for years to come.

1. An Observation of Reflection Oil on Canvas 11x14”, 2022. 2. A Child’s Perspective Oil on Canvas 11x14”, 2022

Olivia Beaudoin

Faculty Mentor: Suzanne Chamlin-Richer

Booth: 27

Track: Social Justice

Abstract:

1. This painting depicts a glass of water against a cloth background using the colors Burnt Sienna and Raw Sienna. Values were manipulated using Titanium White and Ivory Black. This piece inspects the elements of physical reflection and refraction of light to identify ways in which sensory information can be interpreted from different perspectives. This process elicited the inquiry into the ways one’s culture can hold different avenues for identification and perspective. With each layer added over the course of several weeks, this painting was built from a singular point of view regarding the glass itself, but captured the essence behind the dynamics of refraction within the fluid medium. This is representative of the fluidity behind individual and cultural identity, where no singular perspective is indicative of the composition as a whole. 2. To construct this piece, Raw Sienna and Burnt Sienna were used in conjunction with Titanium White and Ivory Black through multiple washes. A barren corner of the studio with a tool left astray is the subject of interest, but holds more intricacies with further inspection. This piece made use of a unique viewpoint to replicate the perspective of a child; they may view this inconspicuous corner with fresh eyes and innocence, which allows the viewer to find meaning in what may seem mundane. This subject matter offers paths for exploration where complexities within texture, value, and tone may be discovered in an unsuspecting setting. Fluctuations in shadows and lighting elicit subtle alterations of value within the floor and wall. A surprising contrast of warm and cool are positioned off-center to emphasize the juxtaposition of the hammer’s relative position with the ground. In this way, a child may find innovative ways to explore seemingly static physical space.

Beauty in the Ancient, Oil on Canvas, 14x11”, 2022

Katharine Creamer

Faculty Mentor: Suzanne Chamlin-Richer

Booth: 28

Track: Social Justice

Abstract:

My piece, Beauty in the Ancient, is a still life painting depicting a piece of driftwood, an origami crane, and a penjing tree against a cloth backdrop. It’s painted utilizing only 3 colors: Raw Sienna, Titanium White, and Ivory Black. Creating this piece was a long process, cycling between painting and scraping back. I revised the painting several times before I reached the final product. Both the art form of Chinese penjing and Japanese origami have a rich history, both originating centuries ago, and are still practiced to this day worldwide. This piece aims to bring these two ancient arts together into one painting, connecting them while still maintaining their individuality. Art is a universal language, having the ability to connect people from different cultures and convey different perspectives. In a world ridden with war and hatred, this is more important than ever.

1. Hidden Complexity, Oil on Canvas, 14x11”, 2022. 2. Behind the Mask, Oil on Canvas, 14x11”, 2022.

Madeleine Carter

Faculty Mentor: Suzanne Chamlin-Richer

Booth: 29

Track: Social Justice and Interdisciplinary Studies

Abstract:

1. This painting was part of a class project to observe common objects from a unique perspective. This work was created with raw sienna, black and white oil paint. I chose to paint these light switches as they were something I walked by everyday but never really noticed. This painting allowed me to observe the fine features of the light switches, such as the cast shadows and paint splotches in this scene. Each light switch's unique hue and shadow variations helped me to appreciate the beauty of diversity in seemingly identical objects. This painting connects to social justice as it emphasizes the importance of viewing situations from different perspectives. My art is influenced by the work of Sylvia Plimack Mangold, who produced striking paintings representing the beauty of everyday household objects. 2. This painting was the observation of a still life designed to reflect on the beauty of artifacts from different societies and time periods. The scene consists of objects collected by different people and placed in front of a brown cloth backdrop. The objects in this scene are a collection of multiple cultures representing the harmony of cultures to form a cohesive and unique piece. I enjoyed collaborating with someone unknown to create a collection of objects that were important to us as a group. This painting relates to social justice as it emphasizes the importance of collective effort as well as the harmony that can come from the mixing of cultures.

In the Eyes of a Child Oil on Canvas 14x11”, 2022

Samantha Fasoldt

Faculty Mentor: Suzanne Chamlin-Richer

Booth: 30

Track: Social Justice

Abstract:

In this piece, I was tasked with painting from direct observation in a setting that would mimic where a child would see from with fresh eyes. There is innocence within the way a child observes a room as their own curiosity brings them down a rabbit hole of distraction. I dared myself to look for something intriguing to me, even though for the past four years I have sat in Loyola 8 countless times. I decided to mask what I already know about the world around me and hone in on specific, mundane objects around the room. Some of which, we would never think to give a second of our time but lead us to extraordinary things. I was immediately drawn to the handle on the front door leading to the room as it is one of the most consistent objects a person interacts with throughout their life. Not only is the image meant to create a type of nostalgia as if one has been there before but captivates the wear and tear of growing older. The splintered, decaying wood on the architrave captivates the lifespan of the door, in contrast to the short life a child has seen. Note the corrosion at the base of the metal handle showing years of usage. With slight changes, I was able to represent the shadows and contrasts of the piece, to focus on realism. The piece is made from oil on canvas using only three colors: black, white and burnt umber. Lastly, it’s important to note the close-proximity relationship between myself and the door which created a far more intimate setting.

1. Water Pipe, Oil on Canvas ,11x14”, 2022 2. Reflection Oil on Canvas 14x11”, Fall 2022

Abby Araujo

Faculty Mentor: Suzanne Chamlin-Richer

Booth: 31

Abstract:

1. When asked to paint from a child's perspective, I instinctually thought of painting from a low vantage point. After some consideration, I came to the conclusion that it is like a child sees to look at something with a fresh set of eyes. Children look at the world with a unique perspective because they do not have any preconceived notions or judgments. I took this approach when observing the ceiling pipe, and I found that the coloring and lighting would make a beautiful art piece. With careful observation, I focused on these elements to bring what most would think to be a boring pipe to life. 2. Painting a clear glass of water felt like a daunting task. After not knowing how to attempt this, I realized I should focus more on how the glass of water interacted with its environment. Then I noticed how the water distorted the appearance of the fabric behind it. It not only altered the shape, but it changed the tone and colors of the fabric. While the surroundings were warm, the glass and fabric behind the class felt much cooler in tone. It was interesting to me how this glass of water could change my perception of my surroundings. The fabric behind the glass was transformed and felt distinctly different from the fabric surrounding the glass. Because of this, when creating the piece, I focused on the surroundings separate from anything involving the glass. I worked outward in to encapsulate the way that the water altered the fabric. This piece made it clear to me how much simple things can change my perception of the world and my surroundings.

Community Agriculture Research: Raising Opportunity Together (CARROT)

Rishi Black, Melody Olivan Sanchez

Faculty Mentors: Dina Franceschi, Reinaldo D. Gonzalez Rodriguez, Scott Lacy, Melissa Quan

Booth: 32

Track: Social Justice and Environment and Sustainability

This research was also presented at Green Village Initiative's 2022 Harvest Fest, Fairfield University's Social Justice in the Humanities Colloquium

This research was supported by the McGuinness Mentorship Program

Abstract:

Community Agriculture Research: Raising Opportunity Together (CARROT) is a collaboration between the Green Village Initiative (GVI) and Fairfield University (FfldU) that works to promote sustainable, urban agriculture through research. Green spaces in urban environments provide a broad payback to the neighborhoods and communities in which they reside. Adapting a framework utilized for open space and parks valuation, this project characterizes the ways that community gardening provides health and wellness to those that live in the city of Bridgeport. Community Gardeners are essential to the research. Their contributions help us to understand how much work gardeners put into their plots and how much they produce.

General Election Survey among Fairfield University Students

Patrick Shaw

Faculty Mentor: Gayle Alberda

Booth: 33

Track: Community-Engaged Learning

Abstract:

Gen Z is unique from previous generations: they are digital natives, they are more racially and ethnically diverse, and on track to be the best-educated generation. Although this generation is still becoming part of the electorate, those who are old enough to vote have participated at higher rates than previously, where turnout was roughly 20%. At their first election in 2018, 30% of Gen Z voters showed out. In 2022, this trend continued with 27% voting. Previous research shows that younger cohorts generally do not turnout at high rates. Why is Gen Z showing higher turnout earlier in life? I attempt to shed light on this by administering a survey to Fairfield University students on a variety of topics, such as approval ratings of current political leaders, opinions and voting habits of past elections, opinions of potential presidential candidates for in the 2024 election, and general issues in Congress. I contend that many of the voters will show their diversity, and a wide variety of answers will show the mindset of the Gen Z voter in America.

The Insulin Affordability Crisis: How Big of a Problem is this for Americans?

Jillian Bauknecht

Faculty Mentor: Gayle Alberda

Booth: 34

Abstract:

Type 1 Diabetes is an autoimmune disease that causes the pancreas to stop producing insulin, a hormone that is needed to keep blood sugar levels in range. T1D is managed via insulin therapy, where people give themselves insulin daily to survive. Currently, there are approximately 1.45 million Americans living with T1D in the United States, including both children and adults. The retail price of one vial of insulin in the US is $275, which would last a diabetic on average around two weeks. The cost of insulin depends on an individual and their insurance situation; some people may pay nothing whereas some people have to pay the full amount. With insulin prices being at an all-time high, this project aims to gain the perspective of multiple players involved in this issue while analyzing how it is affecting average Americans and new ways to reduce the cost within government. Data was collected both quantitatively and qualitatively to gain ample perspectives of the respective population. Americans from around the country were surveyed on their experiences with the high cost of insulin. Select groups, such as political officials, advocacy groups and Type 1 Diabetics were interviewed on their own experiences in the insulin affordability crisis while providing insight on some of the events that are currently ongoing to tackle the situation. This research lays the foundation of where America is currently on insulin affordability and where it can go in the upcoming years.

Assessment of Local Election Officials on Implementing Early Voting

Paul Hovey

Faculty Mentor: Gayle Alberda

Booth: 35

This research was also presented at Midwest Political Science Association

This research was supported by the Mancini Fund

Abstract:

Early voting is a type of election law that has been adopted in some form in all but four U.S. states. In 2022, Connecticut voters decided to amend the constitution to permit early voting. The majority of previous research focuses on early voting after adoption, not before. Furthermore, previous studies often fail to capture the attitudes of local election officials (LEOs) who are the responsible for implementing election laws and policies; research shows this influence matters. This study examines LEO's views on early voting and their capacity to implement early voting prior to its adoption. I surveyed all 339 LEOs in Connecticut. I contend that partisanship, tenure, and bureaucratic desecration of the LEOs influence their notions of early voting as a policy and its implementation. This discretion could impact voter confidence and the overall voting experience. At a time when confidence in elections is increasingly at risk, it is important to understand why LEOs make the choices they do with respect to election administration and how these choices impact the electoral process.

Case Study: Designing Municipal Affordable Housing Plan

Melanie Strout

Faculty Mentor: Gayle Alberda

Booth: 36

This research was supported by the Mancini Fund

Abstract:

The shortage of affordable housing units across the country is a persistent challenge for communities, particularly in the State of Connecticut. Research has demonstrated the complexities and intersectionality of factors and stakeholders from the economics of the housing market, local government, to racial and health disparities, all of which impact quality of life for Connecticut residents. There is not a silver bullet to addressing the issue; however, policy over the years has attempted to provide solutions. By selecting one Connecticut Municipality that submitted an affordable housing plan to the State's Office of Policy Management, this case study focuses on five significant areas of municipal policy formulation and adoption (1) The steps taken; (2) How long each step took; (3) Decision-making process; (4) Identify stakeholders; and (5) Identify data and research utilized. Using interviews and records, I conduct a content analysis. I found that the resources, support from the state and local community, and attitudes affect the development of affordable housing plans. This study provides critical insight to policy formation and adoption success, and highlights the barriers that public administrators face balancing the needs of their community while complying with state law and resources that are needed to adequately address this issue.

Advocacy Through Narration: A Refugee's Perspective

Katherine Peterson

Faculty Mentors: Janie Leatherman, Julie Mughal

Booth: 37

Track: Interdisciplinary Studies

Abstract:

According to the UNHCR, at the end of 2021, an estimated 89.3 million people were forcibly displaced around the world, 27.1 million of which are refugees. Despite this large population of displaced people, their stories and perspectives are rarely told. When they are told, however, the story has the power to draw the attention of society and help encourage activism toward the refugee crisis. Specifically, literature has become a great tool for people to gain a better understanding of the refugee crisis, enabling refugees to share their own perspective. Through connecting with the story of a refugee, readers are more compelled to feel empathetic toward those who are enduring such hardships. Overall, the impact that refugee literature and narration can have is essential to raising awareness and aiding the many people who are unfortunately victims of the ongoing crisis.

Report On StreetSafe Bridgeport

Nya Jones

Faculty Mentor: Mehmet Cansoy

Booth: 38

Track: Community-Engaged Learning and Interdisciplinary Studies

Abstract:

Given the rise of gun violence in Bridgeport, assessing the StreetSafe program, run by the Regional Youth Adult Social Action Partnership (RYASAP) since 2014, and its potential to address the violence is critical. In this report, we offer an initial assessment of the program designed with four objectives. (1) Identify the patterns in StreetSafe's work (interventions, employee training, community partners, and definitions of success) in the context of interviews with key staff members and qualitative analysis of case notes from 2021 and 2022 produced by outreach workers, (2) to evaluate to what extent StreetSafe's interventions align with current best practices in the literature on community-based and youth violence intervention programs, (3) to highlight the program's overall holistic approach to gun violence, (4) to make recommendations that would not only strengthen StreetSafe's ability to engage with this vital work but to show the measurable effectiveness of their program.

“Belong Anywhere”: A Content Analysis of Airbnb Advertisements Amidst Digital Discrimination

Olivia Mahoney

Faculty Mentor: Rachelle Brunn-Bevel

Booth: 39

This research was supported by the Corrigan Scholars Fund

Abstract:

In the last century, the United States has made strides to combat racism, which has become more complicated with the rise of the digital age’s sharing economy. Companies like Airbnb have grappled with maintaining racial equity on their platforms. Airbnb bears the responsibility to monitor biases within their algorithm and user profiles. In 2015, Airbnb began to receive discrimination allegations - users being denied accommodation due to racial profiling by name and profile photo. Since then, Airbnb has worked to eliminate discrimination through many initiatives and the removal of prejudiced hosts. In this project, I examine Airbnb video ads from 3 periods: (1) prior to Airbnb’s discrimination claims (2) during the allegations and the resurgence of Black Lives Matter in 2020, and (3) after Airbnb’s sustained efforts to remedy discrimination. My findings show that, beginning in 2016 and through 2021, Airbnb’s use of human actors in their ads increased dramatically from 6 to 50. This trend also coincides with an increase in racial groups represented. The use of non-White actors increased from 33.33% in 2013-2015 to 84%. Airbnb has transitioned from a young company seeking to establish consumer trust through their ads to an online platform facing the inevitability of inequity. This shift represents a time in which company reputation was on the line, calling Airbnb to action to work on eliminating bias and to shift the perception of the company through advertising.

2023 Collegiate Closet Report

Eden Marchese

Faculty Mentor: Sara Brill

Booth: 40

Track: Social Justice

This research was supported by the Corrigan Scholars Fund

Abstract:

In 2007 a group of Fairfield students and faculty mentors produced a policy report that aimed at studying and improving the lives of LGBTQ+ members of the community entitled the Collegiate Closet Report. In light of the many transformations on Fairfield's campus since that time, the 2023 Collegiate Closet Report returns to consider the campus culture and climate for LGBTQ+ students, faculty, and staff as well as for students, faculty, and staff of color. This updated report brings an intersectional lens to better understand student, faculty, and staff's sense of acceptance and community and to bring to light ways in which the campus can improve to ensure it is a place where all members feel a sense of belonging. As with the original report, the Fairfield community's experiences were gathered through (a) confidential surveys and (b) focus groups. In addition to data collection, the 2023 Report develops the framework to bring the data into conversation with the concepts of hermeneutic and epistemic justice and injustice. This conversation provides a foundation for interrogating the state of the University's climate and culture via philosophical, social, and scientific lenses.

Racism in Reproductive Rights

Jennifer Cramer

Faculty Mentor: Shannon Kelley

Booth: 41

Abstract:

The birth control movement is one of mistrust for women of color because of Eugenics, a movement in the 1920s which used Black and Latino women to test their experiments. This was often done without consent and without warning. When looking at this movement in the United States you can see that people of color were often used, as well as people with disabilities. These racist practices have continued until today and have created a disparity in reproductive justice between white women and women of color. The sterilization of mainly women of color, but also men, has now created an area of distrust between women of color and doctors in charge of their reproductive rights. When looking at the Eugenics movement forward, an analysis of the reproductive laws and practices shows racism within the system. The reproductive rights in the U.S. are therefore inherently racist. This can be seen through sterilization laws and practices, the overturning of Roe V. Wade, maternity care for women of color, and birth control.

Native American and U.S. Mainstream Ideas of Gender, Sex, and Sexuality

Michaela Thompson

Faculty Mentor: Shannon Kelley

Booth: 42

Abstract:

The present-day United States mainstream gender system is binary. This system is based on intertwined and very narrow accepted definitions of sex, sexuality, and gender. Those born with the physical sex of a male are men and those with the physical sex of a female are women. A child's gender is believed to be predestined, often announced before they are even born, and those that don't conform to the features associated with these two accepted destinies, one of which is heterosexuality, are viewed as deviant and isolated from society. This gender system has shifted somewhat in more recent years, but change is not always accepted and can be treated as if it could ruin society. However, other societies exist that allow gender systems with more than just two accepted sexes, genders, or sexualities who play active roles in their communities. Looking at works such as "Gender and Sexuality in Indigenous North America, 1400-1850" by Sandra Slater and Fay A. Yarbrough (2022) and more writings that examine some of these differing systems in precolonial Native American groups, particularly the Zuni and Navajo, this project examines the features that sustain these systems. By doing so, this project challenges the current mainstream binary system, drawing attention to how gender, sex, and sexuality are defined by the society you live in, and encouraging anyone who is hesitant to create more accepting definitions.

Identifying Gender Disparities in International Relations and Global Governments

Cormac Brown

Faculty Mentor: Shannon Kelley

Booth: 43

Track: Community-Engaged Learning and Social Justice

Abstract:

Throughout the globe, we have seen many industries and organizations restructure themselves to be more gender inclusive and promote gender equality. However, one field of work that has seen little change in the pursuit of gender equality has been International Politics. Since governments are the highest form of representation a citizen can have, it should be required that those who fill those positions properly represent their people. Even with that concept, most governments have very little female representation in their representatives, something that is reinforced by cultures and social norms. Even the females who are in office feel a lack of representation as they are still mistreated by their male counterparts. Sexual harassment is still very common in public office positions and continues to impede the representation of women. My research project works to identify instances of sexual harassment, their causes, and how it affects the forms of representation given to women in countries throughout the world.

The Importance of Communication: A Review of Emergency Food Response During the COVID-19 Pandemic

Cassandra Reilly, Allison Carignan, Leah Sullivan

Faculty Mentor: Deborah List

Booth: 44

Track: Community-Engaged Learning and Social Justice and Interdisciplinary Studies

This research was also presented at Connecticut Public Health Association

Abstract:

This study focused on policy makers and disaster response on local, regional, and state levels in relation to food distribution and insecurity during the pandemic. Structured interviews were conducted with major players involved, questions in these interviews were directed at uncovering organizational hardships and gaps in communication. These interviews were analyzed using a coding system to identify recurring themes. Results show differing views at the local and state levels, while individuals on the same level elicited similar themes. The biggest takeaway of the study was the importance of communication, both vertically and horizontally. Horizontally, communication allowed for local leaders to form relationships and strengthen the distribution process within communities. Vertically, the local food distributors struggled due to infrastructure constraints that the state departments were seemingly unaware of. The breakdown in communication was the source of many problems in terms of food access and quality during the pandemic. The research resulted in a core competency model; placing communication, coordination, assurance, prevention and assessment at the forefront for success. Improvements in leadership from participants at all levels were identified as a key change to implement for Connecticut to be better prepared to respond to food insecurity crises in the future.

A Man's Best Friend Helps with Mental Health

Christina De Angelis

Faculty Mentor: Kathryn Hertzmark

Booth: 45

Track: Interdisciplinary Studies

Abstract:

With mental health illnesses and pet companionship on the rise in the United States, I have analyzed how the combination of the two could be beneficial for Americans. Therapy and emotional support dogs have been proven to improve people's mental health by decreasing hospital stays, reducing cortisol levels and blood pressure, and providing routine and purpose for when people can't find motivation. While these dogs do provide many benefits, access and delivery is limited. They are relatively expensive to take care of, there are housing restrictions, and aren't allowed in all public locations since they aren't protected by the Americans with Disabilities Act. Also, people with a lower socioeconomic status are the ones who can't afford dogs, yet are the ones who need them the most because they have higher rates of mental illnesses. These dogs are advantageous to our mental health and provide an alternative treatment besides medication, but we need to improve access in America.

The Efficacy of Technology-Based Interventions in Reducing Weight in Overweight/Obese Individuals

Rachel Hinds

Faculty Mentor: Kathryn Hertzmark

Booth: 46

Track: Interdisciplinary Studies

Abstract:

Obesity is a prevalent and growing health issue in the United States, with 41.9% of the adult population having met the criteria for being obese. This criterion is having a BMI between 30.0 and 39.9. Care of individuals with obesity has been met with many forms of intervention such as lifestyle changes, pharmacotherapy, and, more invasive, surgery. In the last two decades, the internet and technology have advanced significantly, allowing for faster communication and greater access to resources that can change lifestyles. More recently, technology-based interventions have become a prominent means of losing weight, usually through personalized, or tailored, programs and applications. These technology-based interventions are usually accessible through cellular and mobile devices, allowing for increased access and ease of use. Previous research has shown mixed reviews on how technology-based interventions can promote weight loss but was promising when adherence and consistency, alongside other factors, were high. This could mean that technology-based interventions could be impactful in resolving the issue of obesity in the United States. Using PubMed, a search for studies that tested the efficacy of these interventions in reducing weight in obese and overweight individuals was conducted. It was found that technology-based interventions can be efficacious in decreasing weight by a clinically significant amount, especially when promoted by specific factors alongside it.

The Impact of a Religious Education on College Students' Sex-Guilt

Juliana Masiello

Faculty Mentor: Kathryn Hertzmark

Booth: 47

Track: Interdisciplinary Studies

Abstract:

Sex guilt is a negative emotional response or feeling that occurs when an individual's behaviors or actions in relation to sexual activity do not alight with their moral, ethical, or religious beliefs. It is often a feeling of shame, guilt, or anxiety. Previous literature has shown links between high levels of sex-guilt and religiosity. The present study aims to investigate how religiosity promotes sex-guilt in students at religious institutions. Specifically, it aims to answer questions of how religious values on a college campus can further promote sex-guilt in college students. Research and sources were obtained from PsychInfo, Psychology Database, and PubMed using keywords such as sex-guilt, religiously, and college students to conduct a thorough literature review. Evidence suggests that students who attend religious institutions have higher sex-guilt than students who attend non-religious institutions. Further research should look into how different religions can affect sex-guilt and the long-term impacts that high levels of sex-guilt in early adulthood has on intimate relationships later in life.

What is real food? How the ultra-processing of food in America is leading to addiction and obesity.

Grace Maguire

Faculty Mentor: Kathryn Hertzmark

Booth: 48

Track: Interdisciplinary Studies

Abstract:

The ultra-processing of food has become increasingly prevalent in recent years and has been linked to the rising rates of obesity worldwide. This review paper examines the current scientific evidence linking ultra-processed foods to food addiction and obesity, highlighting the specific characteristics of these foods that make them particularly harmful to human health. The paper also explores the social, economic, and political factors that have contributed to the widespread availability and consumption of ultra-processed foods. Additionally, the paper considers potential interventions and policy changes that could help reduce the consumption of ultra-processed foods and mitigate their negative health impacts. Overall, this review paper underscores the urgent need for increased awareness and action on the issue of ultra-processed foods and food addiction and obesity, both at the individual and societal level.

Deconstructing the Placebo Effect: Fact or Fiction?

Tristan Correia

Faculty Mentor: Kathryn Hertzmark

Booth: 49

Track: Interdisciplinary Studies

Abstract:

The “placebo effect” is referred to as the beneficial effect that is the result of a placebo, but this effect cannot be attributed to the placebo itself as it does not contain any therapeutic properties, and thus must be attributed to the patient’s belief in a treatment. Current investigative research has indicated that the placebo effect may have fundamental roots in the field of psychology, especially through its connection to theories such as classical conditioning or an individual’s expectations. Also, there seems to be a variety of factors and influences, especially those involved in the patient-provider interaction, that affect how well the placebo works for the person. In addition, drawing a connection to the field of biology, taking a placebo can have a beneficial effect on the individual due to the release of neurotransmitters, such as dopamine and opioids, and there may even be simultaneous activation of associated brain regions and reduction of pain-related activity in other areas of the brain. Lastly, the ethical considerations surrounding placebos, such as through keeping the patient informed on the medication being taken and providers not withholding information through the act of deception, is an important discussion to have in order to evaluate their use and consider if there might be a benefit for them in today’s health care field when used correctly.

Effect of coping-skills program, RADical Health, on mental health among Fairfield University students

Nicolette Kogut

Faculty Mentor: Kathryn Hertzmark

Booth: 50

Track: Interdisciplinary Studies

Abstract:

Mental health issues are in the rise among university students. A literature review was first conducted with PubMed to understand effective skills for mental health using key terms: coping skills, dialectical behavior therapy, mental health, and university students. RADical Health is a program led by a trained peer guide aimed to teach students coping skills; regarding emotional intelligence, principles and priorities, stress and resilience, perspective and decision making. This program is predicted to foster healthy patterns that diminish stress and increase mental health. A small intervention was assessed, analyzing pre and post assessments measuring coping skills from 15 students after a four-week intervention. Qualitative data including positive participation behaviors was documented. The comparison of the pre and post assessments from the students, along with the progression of student involvement throughout the program, will determine the effectiveness of RADical Health on the development of coping skills in students. Similar studies relating to Dialectal Behavioral Therapy (DBT) and coping skills programs have shown growth in coping-skills and a reduction in mental health problems among university students, which is anticipated from the RADical Health program at Fairfield University. Recommendation for the future involves implementing RADical Health into Fairfield curriculum to cultivate a community of students with developed coping and mental health skills.

Overuse Injuries in College Athletes Related to Year-Round Training and Early Sports Specialization

Julianna Kratz

Faculty Mentor: Kathryn Hertzmark

Booth: 51

Track: Interdisciplinary Studies

Abstract:

Many collegiate athletes, especially Division 1, look at early specialization and year-round training as ways to improve performance and increase successful outcomes in their sport; however, it is believed that this is more likely to result in overuse injuries. Overuse injuries are a growing concern among college student athletes and can be as detrimental as acute injuries. Overuse injuries can be defined as injuries that result from a mechanism of repetitive and cumulative microtrauma, without a specific onset incident. They are the result of repetitive stress on the musculoskeletal system resulting from inadequate rest or recovery. Overuse injuries are particularly associated with sports specialization, defined as intense, yearlong participation in one sport to the exclusion of others. These injuries are becoming epidemic among athletes, with young people ages 5 to 24 years accounting for nearly two-thirds of sports- and recreation-related injuries in the US. Varsity athletes from Fairfield University were sent an online survey consisting of 17 questions, to measure if year-round training and early specialization impacts the number of overuse injuries. Preliminary results show that most athletes suffer from overuse injuries at some point in time, and it is clear that effective strategies are needed to prevent and manage sports injuries. Further research is needed to measure the impact of training, along with using new technologies for overuse prevention and rehabilitation.

The Suggested Biopsychosocial Benefits of Equine Therapy in Veterans with PTSD and Children with ASD

Cassie Pearce

Faculty Mentor: Kathryn Hertzmark

Booth: 52

Track: Interdisciplinary Studies

Abstract:

Hippotherapy and equine therapy is a therapeutic intervention that uses horses as a tool for treatment to improve physical and mental health. Hippo and equine therapy is a growing intervention that is being used in replacement or in addition to other existing therapies or treatments that have been suggested to prove beneficial to populations such as children with Autism Spectrum Disorder (ASD) and Veterans with Post-traumatic Stress Disorder (PTSD). PTSD is an anxiety disorder that impairs social, physical, and occupational functioning and overall quality of life and is the most common psychiatric disorder in Veterans. Studies show that standard treatments for PTSD are either discontinued or potentially an ineffective treatment for Veterans. ASD is characterized by impairments in behavioral, communication, and social functions. There is no known cure for ASD and therefore treated through various necessary interventions. Because research with animal-assisted therapy can be difficult to conduct due to many naturally occurring confounding variables within these studies, few studies exist on the topic. Although research is still in the early stages, there are findings that suggest equine therapy can provide physical, emotional, and or occupational benefits for Veterans with PTSD and Children with ASD. More research needs to be done in order to measure long-term effectiveness as well as to increase access to these resources.

How Elementary Schools Contribute to the Child Obesity Epidemic

Kaitlyn Gallagher

Faculty Mentor: Kathryn Hertzmark

Booth: 53

Track: Interdisciplinary Studies

Abstract:

Childhood obesity has now reached epidemic proportions with over four million children suffering from this disease in the United States. Families, teachers, and principles are faced with complex decisions when it comes to prioritizing individual children's health and well-being. School's ultimately are a key factor for shaping a child's lifestyle and can help provide resources and strategies to maintain risk factors. Over the last few decades, prevention intervention programs in the school settings have been put into place, but are only accessible in certain socioeconomic areas. Screen media exposure is one of the leading causes of childhood obesity, and technology is intertwined with everyday lives more and more each day. School's have integrated technology in school lessons and have now prioritized screen time as a main source of entertainment. Physical activity is minimal during school hours due to increased academic curriculum and budget costs. It is necessary for schools to practice healthy lifestyles and prioritize nutrition, allowing children to take these learnings home. Family-based interventions have been extensively researched, allowing children who are faced with this disease to feel supported by their families, teachers, and friends. Future studies suggest that school settings are an optimal environment for preventing childhood obesity.

The Workplace Culture in America: Why Don’t Americans Utilize Their Paid Sick Days?

Alexa Anselmo

Faculty Mentor: Kathryn Hertzmark

Booth: 54

Abstract:

Almost 60% of the world’s population is a part of the workforce. In recent years, American corporations have increasingly emphasized their employees' mental health and well-being, more so than ever before. A literature review was conducted to explore why fewer Americans use their paid sick days compared to other countries. Paid sick days are defined as short-term leave for health care appointments, short-term illnesses and injuries, and periodic short-term health needs related to chronic health conditions. This literature review was conducted using Psych info and the key search terms were remote workers and paid sick days/leave. Compared to other countries, the U.S. has no federal sick leave policies and relies on voluntary employer policies to provide paid sick days and leave for their employees. The implications of employees going to work while sick includes spreading their illness and increasing the pool of absent or low-productivity workers. Results show that U.S. citizens are just as likely to succumb to illnesses such as the flu as U.K. citizens. Results show that on average, Americans utilized fewer paid sick days than workers in other countries.

A Literature Review on Increasing Access to Mental Health Services: Telepsychiatry, Tele-Mental Health Services, and Primary Care Integration

Mairead Hoye

Faculty Mentor: Kathryn Hertzmark

Booth: 55

Track: Interdisciplinary Studies

Abstract:

Mental health issues are on the rise in the United States despite a decrease in mental health service access. Post-COVID-19 pandemic, telepsychiatry and tele-mental health services have increased as they have been shown to increase access to vulnerable populations. A literature review was conducted to examine potential models for increasing access to mental health care. Results found that both telepsychiatry and the integration of mental health services in primary care settings are effective measures for increasing mental health benefits. Future studies need to be done to further examine the effectiveness of these models and deliveries of care for both providers and patients.

The Effects of Social Determinants on Oral Care in the U.S Population

Natalie Parks

Faculty Mentor: Kathryn Hertzmark

Booth: 56

Track: Interdisciplinary Studies

Abstract:

The disparities in oral health care are significant among uninsured, low-income, and racial/ethnic minority individuals. This literature review examines the following questions: Does dental insurance affect an individual's access to dental care? What is the impact of race/ethnicity on access to dental care? What is the effect of income on access to dental care? Articles were found on Pubmed, Google Scholar, and Psychinfo using the keywords "access to oral care" and one of the social determinants. It has been found that uninsured, low-income, and racial/ethnic minority individuals are less likely to seek oral care and therefore more likely to have poor oral health. Future studies are needed to measure the benefits of increasing access to vulnerable populations using such methods of teledentistry and school sealant programs.

An examination of the prevention, intervention, and education of sexual assault

Lauren Adams

Faculty Mentor: Kathryn Hertzmark

Booth: 57

Track: Interdisciplinary Studies

Abstract:

Sexual assault has been found to affect 1 in 4 women and 1 in 33 men in the United States. Sexual assault can take place in private or public areas, most commonly by individuals that the victim knew or was familiar with at a certain point in their life. The lack of public prevention, intervention, and education procedures and protocols have created a sense of fear and pose a threat to public safety. The goal of this review is to investigate current data regarding instances of sexual assault, as well as present social, ethical, and technological complications involving an absence of outreach and advancements made to support sexual assault victims. An identification of how sexual assault and rape kits are defined, the issue of backlogs in the United States, and the public threat will be included in this research.

Understanding the Economic Effects of DTCA, Government Regulation, and Drug Shortages in the Pharmaceutical Industry

Celina Lennon

Faculty Mentor: Kathryn Hertzmark

Booth: 58

Track: Interdisciplinary Studies

Abstract:

The health care industry currently functions as a capitalistic market, motivated by financial gain. The goal of this literature review is to understand the interaction between economics and the pharmaceutical industry by examining the effects of direct-to-consumer advertising and consumer behavior as well as the causes and implications of pharmaceutical drug shortages. With growing issues in healthcare, understanding the economics behind consumer/producer behavior will allow recommendations for combating these arising problems.

Examining Maternal Mortality in the US: What the US Can Learn from California Maternal Health Initiatives

Gina Baglivo

Faculty Mentor: Kathryn Hertzmark

Booth: 59

Track: Interdisciplinary Studies

Abstract:

The United States has the highest maternal mortality rate of any developed country in the world. In addition to this, the United States is the only country whose maternal mortality rate is increasing, rather than declining. This literature review aims at assessing the current failures and successes that exist in maternal care in the United States in order to understand why the United States' maternal mortality rate is so high. Specifically, the maternal health initiatives in California, the state with the lowest maternal mortality rate, are examined. These initiatives are compared to those that exist, or do not exist in Louisiana, the state with the highest maternal mortality rate. As a result of this review, recommendations will be made for national scale initiatives based on those that are successful in California in an effort to decrease the overall maternal mortality rate in the United States.

Recognizing and Diagnosing Seasonal Affective Disorder in the General Population

Ava Tirri

Faculty Mentor: Kathryn Hertzmark

Booth: 60

Track: Interdisciplinary Studies

Abstract:

This capstone project aims to research seasonal affective disorder, also commonly known as seasonal depression. The seasonal affective disorder is often triggered by seasonal changes in temperature and time. Time change affects the hours of sunlight that one is exposed to and the amount of sleep that one is supposed to get. Symptoms of seasonal affective disorder coincide with major depression symptoms, which include feelings of hopelessness or worthlessness, having low energy, changes in sleep habits, changes in appetite, difficulty concentrating, etc. Fewer hours of sunlight can cause increased sleep or hypersomnia that dysregulates circadian rhythms. Unregulated circadian rhythms can then manifest into mood changes and decrease the amount of dopamine and serotonin production levels. The goal of this research project is to increase awareness of seasonal affective disorder on college campuses to improve outcomes for the target population of young adults.

A literature review on the impacts and implications regarding the effects and practice of hippotherapy

Will Robinson

Faculty Mentor: Kathryn Hertzmark

Booth: 61

Track: Interdisciplinary Studies

Abstract:

Hippotherapy is a treatment technique used to strengthen muscle and improve spasticity by the process of horseback riding. This technique is commonly used in areas throughout the United States, England, and France to address chronic afflictions through active physical therapy. The walking movement of horses resembles the walking motion of humans, and thus can be used as an effective treatment technique for individuals affected by cerebral palsy and varying degrees of spinal cord injuries. In many studies, an improvement in spasticity and improved muscle strength for these individuals has been observed. However, the practice of hippotherapy is not widely understood. This paper aims to develop a deeper understanding of the impacts of hippotherapy as well as the social and ethical implications connected to this form of treatment by analyzing previous literature regarding hippotherapy and its effects.

Direct to Consumer Genetic Testing: The Need for Privacy Protection and Regulation

Allison Carignan

Faculty Mentor: Patrick Kelley

Booth: 62

Abstract:

Background: Direct to consumer genetic testing (DTCGT) has grown due to the aggressive marketing campaigns. Despite the frequent use of these tests, they remain largely unregulated, and their results are inadequately protected.

Objectives: Identify and create an extension of current privacy protections to place DTCGT within the purview of such legislation - Create ecommendations directed at relevant US governmental bodies to increase regulation of DTCGT marketing and regulation -Educate the public, particularly vulnerable populations, on the dangers of DTCGT

Methods: Extensive literature review was completed, analyzing gray literature and scientific research. Keywords were used including DTCGT, HIPAA, GINA, FDA, privacy laws DTCGT, and ethics DTCGT.

Results: As a result of literature review,significant gaps in legislation surrounding privacy and regulation of DTCGT have been uncovered. Recommendations have been made to the proper governmental bodies including extensions of existing legislation. It became clear that people using these tests are unaware of the repercussions they could have to not only their health, but their privacy. Conclusions and Recommendations:

1. The US Department of Health and Human Services should expand the scope of HIPAA to protect DTCGT results
2. The FDA should impose stricter regulations on DTCGT companies when it comes to their informed consents and accuracy of results.

Gynecological Care, a Privilege or Necessity? The Quality of Care on College Campuses

Julia Courtney

Faculty Mentor: Patrick Kelley

Booth: 63

Track: Community-Engaged Learning and Social Justice

Abstract:

Background: Gynecological care is critical and inseparable from adequate health care for young women, creating a need for accessible gynecological care on campuses.

Objectives: This study aims to detail the current limitations in OB/GYN access on campuses, as well as define a baseline for the availability of gynecological services at competing institutions, and define evidence-based recommendations for college campuses.

Methods: The methodology for this study was two-fold, a survey of 6 competing institution health centers to determine the baseline hours of gynecological care, and a literature review to compare data to the baseline availability. A literature review was done using the keywords Gynecological Care, Student Health, Sexual Health, Quality of Care, Sexual Health, Colleges, and Universities.

Results: A survey of 7 competing Colleges and Universities with Fairfield and Fairfield itself found the median number of female students per gynecological appointment slot was 27.32 students. 1 out of 7 centers have a gynecologist performing these services, and most were done by NPs, ATNPs, or PAs. The literature review showed College-age women are at greater risk for STI/STDs and menstrual disorders, and knowledge about care is low.

Conclusions The literature review indicates a need for high-quality gynecological care on college campuses, not reflected in the survey data. Evidence-based recommendations include increasing appointments available on weekends, increasing appointments overall, and transparency of resources available.

Something to Smile About: Recommendations for the Continuity of Oral Health Care for College Students

Caroline Potter

Faculty Mentor: Patrick Kelley

Booth: 64

Abstract:

Background: College students are in a period in their life between adults and adolescents. Being away from home, college students might not be receiving dental care as frequently as they should due to distance and perhaps other anxieties related to the dentist. There is a need for an analysis of the resources for dental care that is provided on campus and recommendations for the continuity of oral health care at Fairfield University. Objectives: 1. Examine the dental services provided by the student health center to see if they are adequate for the needs of the students; 2. Describe the obstacles that university students must overcome in order to receive ongoing dental care; 3. Determine how many students would employ the dental van or other solutions by giving Fairfield University students were given a confidential and random survey.Methods This research will utilize a confidential and random online survey on Qualtrics to determine what percentage of students have not been to the dentist in 6 months or longer. Researchers will talk to the health center to see what resources they already have in place for those students who are wishing to get dental treatment at school. Additionally, researchers will investigate the Smiles For Miles Mobile Dental Center and other nearby companies with mobile dental services to determine prices.Results: A confidential and random online survey has been approved by Fairfield University IRB and research is underway. Results are predicted to indicate a need for an increase in oral health resources on campus based on a lack of dental visits in the past year and/or lack of sleep in the sample study of Fairfield University students. The outcome of the study will contribute to generalized knowledge that could help college health services explore similar approaches to improve access to care and it may illuminate a more patient-centered healthcare delivery system approach at Fairfield University. Conclusions and Recommendations (anticipated): It is predicted that recommendations will entail an increase in dental services which could include free transportation to an in-town dentist that has a partnership with Fairfield University, a dental van that comes to campus twice a semester, or a resident hygienist. Recommendations will be made based on the severity of the need that will be determined from the survey. These recommendations will be targeted toward college students, parents of college students, local dentists, the Dean of Students, the President of Fairfield University, and the Student Health Center.

Recommendations for Mental Health Improvement in Puerto Rico After Environmental Emergencies

Danielle Butz

Faculty Mentor: Patrick Kelley

Booth: 65

Abstract:

Background: After various natural disasters and COVID hit Puerto Rico, the island is struggling infrastructurally and suffering from a mental health crisis. Levels of PTSD and depression have risen among all ages of citizens in Puerto Rico but especially in younger people who the disasters have displaced. Due to this being such a not talked-about topic, I am studying this to provide support and awareness for the growing mental health crisis in Puerto Rico.

Objectives: Find statistics about the mental health crisis in Puerto Rico including suicide/suicide ideation rates, PTSD rates, and, substance abuse rates. Create recommendations to alleviate the mental health crisis in Puerto Rico. Create a connection between mental health advocates in the United States and Puerto Rico

Methods: Utilize literature review using databases as well as research published by entities such as FEMA, The Hispanic Federation, and The PRxPR Relief and Rebuild Fund. Keywords used to search for articles include Mental health, Natural disasters, Puerto Rico, Healthcare, PTSD, Hurricane Maria, Caribbean, Disaster preparedness, Human resources, Therapy, Funding, and Health systems.

Results: Research still in progress.

Conclusions and Recommendations (anticipated) - Target the Puerto Rico government to recommend implementing mental health care professionals in disaster relief groups, and have them stay in the most affected towns for an extended period. Make online therapy more accessible to people in affected areas by adding tablets to major community landmarks so that people can have access to online therapy at least once a week.

Effects of Incarceration on Women's Healthcare

Natalia Bertolotti

Faculty Mentor: Patrick Kelley

Booth: 66

Abstract:

Incarceration affects thousands of individuals in the United States with one of the highest incarceration rates among developed countries. Women are a vulnerable population within the prison system and female rates of incarceration have increased steadily since 1980. Women who are imprisoned are subject to the male prison model, inadequate healthcare, and often sexual abuse. Specific regulations should be put in place to ensure that the health of incarcerated women and their children are protected in local jails, state and federal prisons, and private prisons.

Who is There to Support the Epidemic of the Female Athlete Triad at Fairfield University?

Anna Weissenberg

Faculty Mentor: Patrick Kelley

Booth: 67

Abstract:

Background: The Female Athlete triad syndrome is a combination of disordered eating habits leading to low energy levels, menstrual dysfunction and low bone mineral density. It is common throughout many female athletes, but without access for support within our athletic program many athletes are faced with stress fractures, irregular periods and future health problems of osteoporosis and childbirth complications.

Objectives:

1. To describe the issue of female athlete triad syndrome in our own athletic system through a survey taking a closer look at disordered eating behaviors, menstrual irregularities and stress fracture occurrences on the most vulnerable teams
2. An extensive literature search to develop solutions to reform our Fairfield University Athletic Program to make female health a higher priority
3. Implementation of solutions to create a screening process, education program multi-disciplinary advisory team in our athletic program.

Methods:

An anonymous Qualtrics survey of female athletes on the Cross Country, Dance, Rowing and Swimming & Diving teams to develop an epidemiological view of the female athlete triad prevalence in the most vulnerable teams of the athletic program as well as an extensive literature review.

Results: The results have yet to be reported.

Conclusions and Recommendations:

1. Protocol for mandatory yearly education of athletic care network on the female athlete triad syndrome
2. Multidisciplinary treatment team made up of physician, nutritionist, registered dietician, and mental health professional
3. Nutrition program
4. A protocol for coaches and athletes for referral to resources available
5. Athletes should be assessed for the Triad at pre-participation physical and semi-annual assessment

Recommendations for Increasing the Effectiveness of Cancer Screenings for Black Americans

Sydney Youd

Faculty Mentor: Patrick Kelley

Booth: 68

Abstract:

Background: Despite a decline in cancer incidence over the last decade, Black people still experience a disproportionate burden of cancer. Cancer incidence among Black men is 6% higher and cancer mortality is 19% higher as compared to those rates in White men. Incidence of cancer in Black women is 8% lower than in White women, but they have a 12% higher cancer mortality rate. The overall rate of cancer screening among the Black population is lower than that of the White population.

Objectives: 1. Identify factors contributing to low cancer screening rates among Black Americans 2. Spread awareness about the cancer disparities in America 3. Make recommendations for improving cancer screening rates and their effectiveness for Black Americans.

Methods: A literature search was performed using peer-reviewed journals and relevant gray literature.

Results: Factors such as low health literacy, lack of health insurance, mistrust of healthcare organizations, and miscommunication between patients and providers are factors that may cause low rates of cancer screening in Black Americans. Lower rates of cancer screenings in Black Americans have been linked to poor cancer outcomes.

Conclusions: Efforts to improve screening among Black Americans should utilize community health workers who have developed a relationship with the community and are viewed as trustworthy. Hospitals in areas with high populations of Black Americans can start community benefits programs that provide free mobile cancer screening and education clinics. Additionally, given the fact that Black Americans are more likely to develop certain cancers earlier than White Americans, screening guidelines should take race into account.

Why aren’t you taking your pills? Expanding the role of pharmacists to combat non-compliance

Julia Stobierska

Faculty Mentor: Patrick Kelley

Booth: 69

Abstract:

Background: One of the biggest issues in the pharmaceutical healthcare field is medicinal non-compliance. The results of not taking medications are treatment failures including deaths and an increase in healthcare costs. This project aims to learn about the main reasons for noncompliance with medications and to research ways to solve them. It will help the underprivileged and educate the public about how a pharmacy can do more than just dispense medications. Methods: We did a literature review using databases of The National Academies Press, CDC, and the American Journal of Public Health. The key words used were pharmacy, medications, and non-compliance. Results: Some ways to combat non-compliance are changes technologically like packaging in blister packs, automatic pill dispensers, microchips in caps, and receiving text messages. Recommendations: Communication through public health can help by using directly observed therapy or increasing the collaboration between a pharmacist and a provider. The pharmacist’s role can also expand by tapping into the provider’s role to prescribe certain pills or refills. Lastly, the price of medications needs to decrease by expanding insurance coverage and combatting big pharma’s high prices of drugs. It is a right for patients to get the medications that they need to survive and be healthy. I recommend that all community pharmacies employ community health workers and that the pharmacist can have a bigger role than just counting pills.

Pornography Addiction on College Campus: What Should We Do?

Josue De Los Santos

Faculty Mentor: Patrick Kelley

Booth: 70

Abstract:

Addictions can have dentrimental effects in people and their behavior. There are many different addictions within this generation and society but one specifically that is not necessarily talked about enough is the negative side effects of pornography addiction. Currently, there is literature that presents evidence that the reward center in the brain can be affected with pornographic content watching behaviors similar to drug addiction. Additionally, there are also multiple studies that suggest that pornographic addiction can result in different issues like brain desensitization, an increased likelihood of objectifying partners, relationship secrecy, libido and erectile issues, and a higher concentration of mental health issues like stress and low self esteem. I am interested in this topic because I would like to increase awareness of this public and mental health issue.

Calming the Storm: The Weathering Hypothesis and its role In African American Women Health

Kenneisha Norford

Faculty Mentor: Patrick Kelley

Booth: 71

Track: Social Justice and Interdisciplinary Studies

Abstract:

In the 1970's Arline Geraniums came up with the term weathering as metaphor to describe the sense of erosion of health by constant stress. She observed that pregnant teenagers that worked a part time job were suffering from chronic health conditions that were not occurring in affluent students. She hypothesized that weathering was the cause of health decline within marginalized communities, as constant stressors lead to negative physiological changes. Geraniums's weathering hypothesis was not initially accepted, as many believed that the reason black communities had worse outcomes was because of unhealthy life choices and genetic differences. Over the years the weathering hypothesis has become more accepted, and weathering has since been tied to physiological issues like increased allostatic load, maternal mortality, and increased incidence of cardiac events. Further studies show that racially based stressors result in disparities relating to morbidly and mortality, making it difficult to consider all women a homogenous population when studying health equity. For my studies, I explored the determinates of health that contribute to weathering . After finding these causes, I plan to investigate possible solutions to prevent or even treat the present issue.

INNOVATIVE RESEARCH SYMPOSIUM

SIGMA XI
THE SCIENTIFIC RESEARCH SOCIETY

Characterization of gonad morphology in a low-fertility C. elegans mutant with defects in dynein and MEL-28

Julia Stobierska

Faculty Mentor: Anita Fernandez

Booth: 72

This research was also presented at *International C. elegans Conference*

This research was supported by the Hulseman Student Global Learning and the Science Institute Sybertz Fund

Abstract:

We have been studying how dynein, a minus-end directed microtubule motor, and MEL-28, a protein required for rebuilding the nuclear pore after mitosis, interact to affect fertility in C. elegans. Single mutations to dhc-1 and mel-28 have minimal impact on fertility. In contrast, the dhc-1; mel-28 double mutant has a severely reduced brood size. This suggests that dynein and MEL-28 act in parallel to promote fertility in C. elegans. In early adulthood, dhc-1; mel-28 double mutants lay eggs at the same rate as each single mutant. However about eight hours after beginning to lay eggs, the egg-lay rate of dhc-1; mel-28 double mutants dramatically slows. We generated mutants that express a cell membrane component fused to mCherry and a GFP-tagged chromatin marker and used fluorescence microscopy to characterize phenotypes. Each single mutant looked similar to the wild type. In the double mutants, the proximal gonads show a variety of mutant phenotypes, including small and rounded oocytes, lack of chromatin, and conglomerated chromosomes. In the distal gonad, double mutants have rounded and multinucleated compartments and an occluded lumen. Despite these differences, the length of the gonads is not significantly different between the wild type and the mutants. The mutant phenotypes we observed show that the dhc-1; mel-28 double disruption interferes with the proper formation of the oocytes, which could explain the low-fecundity phenotype.

In the Nematode Worm C. elegans, dhc-1; mel-28 Double Mutants have Defective Yolk Import

Anna Weissenberg

Faculty Mentor: Anita Fernandez

Booth: 73

This research was also presented at *International C. elegans Conference*

This research was supported by the Hulseman Student Global Learning and the Science Institute Sybertz Fund

Abstract:

Dynein is a multi-protein molecular motor that ferries cargo toward the minus end of microtubules. MEL-28 is a protein with roles in the nuclear pore and chromosome segregation. We have been studying genetic interactions involving dhc-1, which encodes the largest subunit of dynein, and the mel-28 gene. Compared to the wild type and single mutants, dhc-1; mel-28 double mutants have significantly smaller brood sizes. We crossed fluorescent markers into the mutants in order to assess two specific intercellular trafficking events. To study coelomocyte uptake, we used the myo3::ssGFP transgene. This marker is expressed in muscle cells and released into the pseudocoelom, where scavenger cells called coelomocytes absorb the ssGFP via endocytosis. There was no significant difference in coelomocytes' endocytosis ability amongst the strains we tested suggesting that the reduced overall brood size in dhc-1; mel-28 double mutants is unrelated to the activity of endocytosis by coelomocytes. We also crossed a YP170::tdimer2 transgene to the mutants to study the trafficking of yolk protein from the intestine to the oocytes. In dhc-1; mel-28 double mutants, the oocytes fail to absorb yolk protein and instead it accumulates in the surrounding pseudocoelom. This suggests that the low brood size in dhc-1; mel-28 mutants could be due to the reduced ability of receptor-mediated endocytosis of yolk protein into the oocytes.

An RNAi screen for genes that impact a low-fertility phenotype in C. elegans nematode worms

Allison Carignan, Julia Courtney, Serena Koshy

Faculty Mentor: Anita Fernandez

Booth: 74

Abstract:

Caenorhabditis elegans is a microscopic nematode worm. Genes in the C. elegans genome have functional counterparts in the human genome, making these worms an ideal model organism for understanding human genetics. Gene function can be impaired using RNAi, a technique whereby double-stranded RNA is introduced into an organism to disrupt a specific gene's expression. There is a library of publicly-available RNAi clones engineered to target almost every one of the ~20,000 genes in the C. elegans genome. We have been using this library to screen for modifiers of the low-fertility dhc-1; mel-28 double mutant phenotype. The dhc-1 gene encodes the largest subunit of the microtubule motor protein dynein and the mel-28 gene produces a protein required for nuclear pore function and chromosome segregation. Both genes are conserved in humans. dhc-1 and mel-28 act in parallel to promote fertility, but it is not clear why simultaneously disrupting these two genes reduces brood size. To determine which cellular functions are implicated in this fertility problem, RNAi bacteria were fed to dhc-1; mel-28 double mutants. We compared the brood size caused by each RNAi disruption to the brood size produced from baseline negative control treatments. We identified genes that exacerbate the low fertility phenotype and other genes that partially rescue the low brood size. We will have screened over 1000 clones by the end of the semester.

Dynactin Defects Cause Sperm Function Deficiencies that are Rescued by Mutating Nucleoporin Genes in C. elegans

Sydney Youd

Faculty Mentor: Anita Fernandez

Booth: 75

This research was also presented at *International C. elegans Conference*

This research was supported by the Science Institute Sybertz Fund

Abstract:

Defects to the dnc-1 gene cause fertility problems in the nematode C. elegans. dnc-1 encodes part of dynactin, a multi-protein complex that activates the microtubule motors dynein and kinesin. dnc-1 mutant hermaphrodites have lower rates of self-fertilization and smaller brood sizes as compared to normal hermaphrodites. Matings between dnc-1 mutant males and normal females produced a low brood size with a low fertilization rate, suggesting that both dnc-1 mutant hermaphrodites and dnc-1 mutant males produce inefficient sperm. To study the dnc-1 mutant sperm more directly, we ran sperm competition tests. During a mating, normal male sperm typically outcompete normal hermaphrodite sperm. This leads to most progeny of a mating being sired by the male. When dnc-1 mutant males were mated to wild-type hermaphrodites, less than half the progeny were sired by the mutant males. This shows dnc-1 mutant male sperm cannot outcompete wild-type hermaphrodite sperm, and supports the idea that defects to dnc-1 impact sperm competence. We found that disruption of the mel-28 gene, which encodes a different component of the Y complex of the nuclear pore, partially rescues sperm defects in dnc-1 mutants. To determine if other Y complex components also impact the dnc-1 mutant phenotype, we made the npp-5; dnc-1 double mutant. These double mutants had a bigger brood size and a higher fertilization rate than the dnc-1 single mutant, supporting the idea that defects to Y complex components rescue sperm problems caused by mutations in dnc-1.

Romance for Red Wolves?

Christopher Adornato, Josue De Los Santos

Faculty Mentor: Ashley Byun

Booth: 76

Track: Environment and Sustainability

This research was also presented at *Community Engaged Learning End of Year Event*

Abstract:

The Red Wolf (Canis rufus) is a critically endangered wolf species native to North America. There are currently around 250 in captivity and only about 15-20 left in the wild. After being declared endangered in the early 1970's, concerted efforts were made to capture and protect all remaining wild individuals. As part of the effort to conserve this species, red wolves are part of the Species Survival Plan (SSP), a global conservation program which seeks to preserve species and increase population numbers through managed breeding. In January 2023, the Connecticut's Beardsley Zoo received a new potential breeding pair of Red Wolves. From January until April, we observed the behaviors of these wolves in order to assess mating compatibility as well as document any possible courtship and breeding behavior. From this data we aim to provide useful information that may aid the Red Wolf SSP and Beardsley Zoo in future care and conservation of these animals.

If You Give a Monkey an iPad

Zana Imetovski, Peyton Ralph, Madeline Bosse, Sofia Acierno, Victoria Pellegatto, Anne Mackey, Simona Teodorescu

Faculty Mentors: Ashley Byun, Mathew LaClair

Booth: 77

Track: Community-Engaged Learning and Environment and Sustainability and Interdisciplinary Studies

This research was supported by the Mancini Fund

Abstract:

Our project examines the behavior, cognition and cognitive enrichment in Black-handed spider monkeys (Ateles geoffroyi) at the Connecticut's Beardsley Zoo (CBZ). While touchscreens have been used for enrichment activities and cognitive testing in Old World primates at institutions such the Lincoln Park Zoo, to our knowledge, we are the first to use this technology on New World primates in a zoo setting. Over the past year, we have documented the behaviors and interactions between four Black-handed spider monkeys at CBZ and began touchscreen training on them. Recently, we installed iPads preloaded with games such as "Bubble Pop" and other apps that could possibly provide cognitive enrichment and engagement. We are currently observing the interactions of the monkeys with the iPad, developing methods to encourage engagement, and determining what impact, if any, the iPad has on their overall behavior.

The Sounds of Love: Analyzing Possible Estrus Cues in Amur Leopards

Emma King, Will Robinson, Marlee Dubin

Faculty Mentor: Ashley Byun

Booth: 78

Track: Community-Engaged Learning

This research was also presented at *2023 Annual Association of Zoos and Aquariums Conference*

Abstract:

Amur leopards (Panthera pardus orientalis) are currently listed as critically endangered by the International Union of the Conservation of Nature (IUCN). Having knowledge of their reproductive physiology is critical for conservation management. However, such knowledge remains scarce. There is anecdotal evidence that felids like leopards, vocalize significantly more when ovulating (in estrus) and that this can be an indicator of breeding potential when hormonal assays are unavailable. Our project focuses on testing this assumption. At the Connecticut's Beardsley Zoo, there are two Amur leopards, one male and one female. We placed two continuous audio recorders into their enclosures to collect 24/7 recordings during the Spring 2023 semester. We annotated these recordings by first converting them into sound spectrograms and then documented the types and numbers of vocalizations. These data were then used to train Felidetect, a machine learning based program, which was then used to collect information on call frequency over 5,000 recorded hours. Fecal samples were simultaneously collected and sent to the Cincinnati Zoo for hormonal analysis. From these data, we hope to definitively show whether call frequency and estrus cycles are correlated and if call frequency is a valid indicator of ovulation. If so, our work will provide valuable information that can be used to further understand the reproductive cycles of these endangered cats and support their conservation and preservation.

Crane-zy, Stupid, Love

Sarah Bucher, Rylee Harrell

Faculty Mentor: Ashley Byun

Booth: 79

Track: Community-Engaged Learning

Abstract:

White-naped cranes (Grus vipio) have a current status of “vulnerable” on the IUCN red list. Based on their current status, White-naped cranes are part of the Species Survival Plan (SSP),a global captive breeding program which aims to replenish declining population numbers. At the Connecticut’s Beardsley Zoo (CBZ), the behaviors of two White-naped cranes, Cora and McDuffy are being closely observed to assess mating compatibility using a combination of direct observations, camera trap images and continuous audio recordings to capture the frequency of mating calls. The data collected over this 2023 mating season will be compared with data collected in the previous year to identify any differences or progression in their mating behaviors. These data will be valuable for determining the mating potential of these two White-naped Cranes at CBZ.

Behavioral Analysis of Brook Trout Aggression

Joseph Nizzardo, Olivia Beaudoin

Faculty Mentor: Ashley Byun

Booth: 80

Track: Environment and Sustainability

Abstract:

Beginning in the late 19th century, brook trout (Salvelinus fontinalis) began to disappear from native habitats due to land development, agriculture and pollution. Today, various conservation efforts are underway to restore brook trout to waters within their historic and native range in the eastern part of the US. As part of this conservation effort, brook trout hatchlings or fingerlings have been raised at the CT's Beardsley Zoo for a number of years with the goal of ultimately releasing them in local rivers. It is best for them to be released in local waterways as healthy as possible. Unfortunately, fingerling colonies have been known to exhibit aggressive behaviors that could potentially threaten this objective. The goal of our project was to identify the drivers of fingerling aggression and ultimately assess how to minimize these behaviors. To track individuals and identify their specific behaviors we used "Fishial Recognition" a software developed specifically for this purpose. Initial observations suggest that potential sources of aggression include location within the tank, the timing of food distribution, individual size, and coloration of the aggressor. Once these sources are identified, we hope to make recommendations to husbandry caretakers to decrease aggression and improve population output and health.

Quantifying Fiber Presence in Drinking Water on Fairfield University's Campus

Jordan Bosse

Faculty Mentor: Brian Walker

Booth: 81

This research was also presented at *Society for Integrative & Comparative Biology Conference*

This research was supported by the Mancini Fund

Abstract:

Microplastics, or small plastic pieces ranging from 1 to 5 mm, have become a booming area of investigation for many researchers. These fibers have been found to exist in the air, water, and food around us. These small fibers have even been identified in human stool and blood. Recently, investigation on bottled, tap, and groundwater that is ingested by individuals every day has occurred to determine the quantity of microplastics found that could be entering humans. In this study, we collected drinking water samples from six locations around the Fairfield University campus. These included resident hall kitchen sinks, Bannow's bathroom taps, Brita filtered water, Tully dining hall hydration station, and water bottle filter water. These samples were filtered using the Büchner Funnel vacuum filtration system. Each filter and fiber were then photographed using a dissecting microscope. Later, the identity of each fiber will use FT-IR spectrophotometry and the Shimadzu FT-IR microscope. We will report on the quantity of fibers found in each sample and the differences in the cleanliness of the various sources.

Analysis of Microplastics in Magellanic Penguin Chick Fecal Samples

Jada Ormsbee

Faculty Mentor: Brian Walker

Booth: 82

This research was also presented at *Society for Integrative and Comparative Biology Conference and the 11th International Penguin Conference*

This research was supported by the Lawrence Family Fund

Abstract:

Microplastics, synthetic fibers less than 5 mm in length, have become a hot topic in the media recently as they have been discovered in human blood and placenta. This relatively new field of research has focused a lot on quantifying microplastics in all areas of the environment, especially in marine habitats. There are very few papers examining microplastics in penguins, and even fewer that examine microplastics in penguin chicks. The goal of this project is to expand the field of microplastic research to living penguin chicks found in the wild. Fibers were analyzed from 50 Magellanic penguin chick fecal samples collected in Punta Tombo, Argentina. The samples were processed by digesting the organic matter in 30% hydrogen peroxide, followed by a density separation with saturated sodium chloride. The samples were filtered using the Büchner funnel vacuum filtration method. From there, fibers were analyzed based on color, size, and identity. Individual fibers were identified using the FTIR spectrophotometer. From the 50 fecal samples analyzed, 222 fibers have been identified and described based on their color and size. Microplastics have been identified in numerous samples, including identifications such as polyester (PET), polyethylene, and polypropylene. This methodology can be used in future investigations, and the results of this project will be compared to the results of wild adult Magellanic penguins in the near future.

Impacts of Climate Change on Venomous Snakes

Alexa Buongiovanni

Faculty Mentor: James Biardi

Booth: 83

Track: Environment and Sustainability

Abstract:

Ectothermic organisms are considered to be particularly vulnerable to climate change due to their dependence on the environment to regulate their body temperature. As the planet continues to warm, the body temperature of terrestrial ectotherms is likely to rise as well, causing them to require additional energy and thus, more food. However, in the case of venomous snakes, to consume more food the enzymes in their venom must continue to function under higher temperatures. To test the effect of temperature on the enzymes in snake venom, the activity of snake venom metalloproteinases (SVMPs) was measured at 35℃, 40℃, and 45℃ for 12 different species using a gelatinase assay with a fluorescein conjugate. For each species, a one-way repeated measures ANOVA was conducted to determine whether the rate of enzymatic activity varied as a function of temperature. Higher temperatures were found to significantly increase the rate of SVMP activity across all species. However, paired samples t-tests revealed that increases of 5℃ did not yield significant changes in enzymatic rate for all species, unlike increases of 10℃. These results suggest that while climate change is likely to significantly alter the rate of SVMPs, some snake species may experience greater changes than others. Additionally, although 45℃ is not likely to cause the denaturation of SVMPs, further research should be conducted to investigate the effect of temperature on other enzymes in snake venom.

The Evolution of Elapidae, Viperidae, and Crotalinae Families through use of Venom Proteomics

Alexandra Carlotto

Faculty Mentors: James Biardi, Ashley Byun

Booth: 84

Abstract:

With 3,500 species covering five continents, snakes comprise just a part of the Squamata order. These squamate reptiles include both venomous and non-venomous taxa, with Elapidae, Viperidae, Crotalinae, and Atractaspididae constituting the venomous families. Venomous snakes are characterized by the ability to produce toxins in their salivary glands and then eject that toxin for use in subduing prey. This research analyzes the evolution of the snake families Elapidae, Viperidae, and Crotalinae through the protein composition in their venoms. Previous research has documented the evolution of snakes through genetic and morphological characteristics. Less has looked into the evolution of venoms using proteomics. Snake venoms are made up of a complex mix of toxin protein families, which vary between species. Utilizing SDS-PAGE I looked at the banding patterns in the venoms of ten different snake species. This data was then mapped onto an ancestral reconstruction of the evolution of these species based on genetic information. I then examined parallel evolution of bands (gain and/or loss) across the phylogeny of these taxa.

Hydrology drives interannual variability in hypoxia in Lake Lillinonah (Northeastern USA)

Olivia Beaudoin

Faculty Mentor: Jennifer Klug

Booth: 85

This research was also presented at *Global Lake Ecological Observatory Network 2023 Virtual All Hands' Meeting*

Abstract:

Interannual variability in environmental conditions has important consequences for the organisms living within aquatic systems. For example, years with higher incidence of stressful conditions such as deepwater hypoxia can restrict habitat use by fish. We studied drivers of interannual variability in deepwater hypoxia in Lake Lillinonah, a eutrophic reservoir in the Northeastern USA. The lake may be dimictic or polymictic depending on the amount of river inflow. Although deepwater hypoxia occurs in most years, the timing of onset and total number of hypoxic days varies. Using data from a 10-year period, we found that years with lower early summer river flow had higher rates of early summer oxygen depletion which translated to earlier onset of hypoxia and more total days of hypoxia. These findings indicate that hypoxia within this system is driven by river hydrology. As changes in river hydrology are expected with the progression of climate change, uncovering consequences is essential for protecting biota that make use of deepwater habitat.

Characterization of Soil Bacteria with Antibacterial and Antifungal Properties

Kenneisha Norford, Elani Gordon

Faculty Mentor: Olivia Harriott

Booth: 86

Track: Environment and Sustainability

Abstract:

Antibiotic resistance is an ongoing crisis that can prevent the treatment of life-threatening bacterial infections. To address this issue, we and other students and researchers associated with the Tiny Earth project are collecting and studying soil bacteria in the hopes of discovering a novel antibiotic drug. Six soil isolates that were previously shown to exhibit antibacterial activities were further characterized. BLASTn analysis of 16S rRNA gene sequences revealed the isolates were most closely related to the genus Bacillus (five isolates) and Lysobacter enzymogenes. Further testing of the isolate tentatively identified as L. enzymogenes showed its growth tolerance to high salt media, its ability to hydrolyze starch, beta-hemolysis activity, and anti-staphylococcal and anti-fungal properties. These findings, along with its microscopic morphology and Gram negative reaction are consistent with other strains of L. enzymogenes that have been characterized.

Relating variation in morphology and maneuverability of juvenile bluegills

Caroline Potter, Will Robinson

Faculty Mentor: Shannon Gerry

Booth: 87

This research was also presented at *Society for Integrative and Comparative Biology, Annual Meeting 2023*

This research was supported by the Mancini Fund,

Abstract:

Bluegill sunfish (Lepomis macrochirus) are typical freshwater fish found in lakes and ponds. Previous research has shown that adult bluegills diverge in their body shape and swimming ability based on habitat. Littoral fish have deeper bodies with larger fins to aid in maneuverability, while pelagic fish have more streamlined bodies for steady swimming. Adults of each ecomorph nest in the littoral zone but it is not known what causes some juveniles to move to the pelagic habitat. The goal of this study was to induce morphological divergence by rearing fish in two habitats, simulated littoral and simulated pelagic, and test for differences in their morphology and maneuverability performance. We hypothesized that juveniles raised in a littoral habitat would be comparable to adults: they would have deeper bodies and broader fins to better navigate through an obstacle course, as compared to pelagic fish. The snout and center of mass of each fish were tracked to quantify velocities and accelerations. Individuals were photographed for morphological analysis. Neither morphology nor performance differed between ecomorphs ($P > 0.05$). Therefore, morphological divergence and performance were not induced by rearing juvenile bluegills in two different habitats.

The Effect of Oleuropein on BRCA1-ZBRK1 Tumor Suppressing Complex and MMP9 levels in MCF7 Cells

Margaret Rodgers, Kate Junkins

Faculty Mentor: Shelley Phelan

Booth: 88

Abstract:

Oleuropein, a type of polyphenolic compound, is found in the skin, flesh, and seeds of green olives. Oleuropein has been demonstrated to decrease breast cancer cell proliferation and cause cell death (apoptosis). However, the exact mechanism of action has yet to be elucidated. It has been previously demonstrated that oleuropein causes down-regulation of matrix metalloproteinases class 9 proteins (MMP9s), which have been linked to metastasis in breast cancer cell lines. Two key players in metastatic breast cancer, BRCA1 and ZBRK1 use DNA damage repair and transcriptional repression to form a tumor suppressing complex. When the activity of the BRCA-ZBRK1 complex is compromised, breast cancer cell proliferation occurs. Additionally, ZBRK1 levels has been shown to be inversely proportional to MMP9 expression, indicating ZBRK1 may modulate MMP9 expression to effect metastasis. Due to the similarities in results between treatment with oleuropein and the effect of the functional BRCA1-ZBRK1 complex, it was hypothesized that increased expression of BRCA1-ZBRK1 could be a potential mechanism for oleuropeins' reduction of breast cancer cell proliferation and apoptosis. Experiments were conducted using MCF7 human breast cancer cells. Cells were treated with 200 ug/ml oleuropein and an LDH assay was conducted to measure cytotoxicity differences between treated and untreated cells. It was found that oleuropein caused increased cell death in cells after 24 and 48 hours (p value < 0.01). An Annexin V assay was then performed to confirm that cell death was attributed to apoptosis. Western blot analysis using ZBRK1, BRCA1, and MMP9 antibodies demonstrated that cells treated with oleuropein show higher expression of BRCA1 and decreased expression of MMP9s. The data also indicated that there was no change in expression of ZBRK1. In summary, we were able to find evidence to suggest that Oleuropein increases BRCA1 levels and decreases levels of MMP9s in treated cells, although more work should be conducted to confirm the interaction of the BRCA1-ZBRK1 complex and the details of this mechanism.

The Effect of Dexamethasone on H9c2 Cardiomyocytes

Eliza Hogan, Elizabeth Ricci

Faculty Mentor: Shelley Phelan

Booth: 89

Abstract:

Dexamethasone is a common anti-inflammatory medication and is thought to replicate natural hormones produced by the adrenal glands. Dexamethasone is a glucocorticoid, which can control cell growth and differentiation. The medication has many side effects including muscle weakness. Use of dexamethasone is highly restricted for people with congestive heart failure due to swelling and increased sodium levels. It is also suggested that prolonged use of dexamethasone can increase one's chance of developing cardiovascular disease. In order to understand its effect on the heart, the effects of dexamethasone on the oxidative stress of cardiomyocytes was investigated. H9c2 cardiomyocyte cells were treated with various concentrations of dexamethasone for 24 and 48 hour periods. Oxidative stress was then measured using a peroxide detection assay, which measures hydrogen peroxide released from cells into the culture media. While our experiments are still ongoing, we have optimized the conditions for the peroxide detection assay and hope to have results soon. Based on the literature, we predict that cardiomyocytes would undergo significant stress with increased concentrations of dexamethasone. By using a control, 10uM, and 50uM treatment, we expect levels of oxidative stress to increase exponentially starting from the control baseline. This work is important because it allows us to understand the effects of common anti-inflammatory drugs on the heart using microscopic techniques.

3D Bioprinting of a Human Blood Vessel Using Collagen Bioink to Optimize Cell Growth Conditions

Eliza Hogan, Elizabeth Ricci

Faculty Mentor: Shelley Phelan

Booth: 90

Track: Interdisciplinary Studies

This research was also presented at *2023 Materials Research Society Spring Meeting*

This research was supported by the Hardiman Scholars

Abstract:

Traditional vein grafts are a complicated surgery where doctors must deeply cut a patient's legs and neck to harvest a vein, putting patients at risk of traumatic surgery. Therefore, creating a personalized vein using their body cells is essential. This research will create a simulated blood vein using collagen bioink as a scaffold for cell growth. Collagen is the main structural element of the extracellular matrix found in the vessel wall. Collagen provides a support structure with a tensile strength that controls the cell growth direction as cells adhere and elongate. Our preliminary study shows that collagen bioink does not lose its structural integrity when submerged in DMEM (Dulbecco's Modified Eagle's Medium) cell media. There has been success in the blood vessel model using collagen bioink with H9c2 cardiomyocyte cells. After having successfully addressed collagen structure, cell mixing, sterility, and cell attachment, efforts eventually can use two primary cell lines used in blood vessel research, human umbilical vein endothelial cells (HUVEC) and human aortic smooth muscle cells (HASMC). The HUVEC and HASMC will be co-cultured, mixed with collagen-based bioink, and printed to simulate the geometry of an actual blood vessel.

Label-Free Autofluorescence Imaging Reveals Different Metabolic Responses to Adverse Growth Conditions Between Normal and Breast Cancer Cell Lines

Katherine Junkins, Margaret Rodgers

Faculty Mentor: Shelley Phelan

Booth: 91

This research was also presented at *American Association for Cancer Research Conference (April 14-19 2023)*

This research was supported by the NSF Grant #1607664 "Cell Growth Laws and Quantitative Microscopy for Cancer Aggressiveness Imaging"

Abstract:

Cancer cells are metabolically distinct from normal cells and can adapt differently to adverse growth conditions. We sought to compare normal MCF10A and Ras-transformed MCF10AT cells under various conditions (regular growth media, doxorubicin-treatment, and glucose-deprived media) by imaging endogenous cellular FAD and NADH fluorescence and comparing it to proliferation rates (measured by MTS assay) and chromatin structure (measured by Hoescht staining). Under normal growth conditions, MCF10AT cells displayed similar levels of FAD and higher levels of mitochondrial NADH than MCF10A cells. Elevated NADH in MCF10AT cells seems to reflect the preference for anaerobic glycolysis rather than oxidative phosphorylation (the so-called Warburg effect). Our MTS data showed that doxorubicin treatment did not significantly affect MCF10AT cell proliferation but led to a modest reduction in cell proliferation in the normal cell line. Likewise, in MCF10AT cells, doxorubicin treatment led to an increase in FAD and a decrease in NADH. Conversely, in MCF10A cells, doxorubicin led to a decrease in FAD levels and an increase in mitochondrial NADH. These results suggest that the cancer line may be switching to oxidative phosphorylation to resist doxorubicin-induced toxicity, while the normal cells reduce oxidative phosphorylation with growth inhibition. In contrast to the doxorubicin response, glucose deprivation produced significant growth inhibition and cell death in MCF10AT cells while having a modest growth-inhibitory effect on the normal line. Interestingly, low glucose decreased FAD and mitochondrial NADH in MCF10AT cells, suggesting that both aerobic and anaerobic respiration was reduced and consistent with the marked reduction in observed cell viability. In contrast, MCF10A cells showed a slight decrease in FAD and an increase in NADH, suggesting a decrease in oxidative phosphorylation consistent with the modest growth inhibition observed. Finally, MCF10ATs displayed higher levels of Hoechst staining than MCF10A cells, consistent with a higher proportion of condensed chromatin observed in cancer cells. In addition, we found a larger increase in Hoechst staining in MCF10AT cells in response to both

doxorubicin and low glucose, as compared to MCF10A cells. This data suggests that the chromatin state of the two lines is also differentially affected by these treatments. In conclusion, label-free measurement of autofluorescence of cellular FAD and mitochondrial NADH reveals the different metabolic and chromatin responses to adverse growth conditions between cancer and non-cancer cells. These differences are associated with the different proliferation rates and may have important clinical implications for cancer risk stratification.

Characterization of the Conductive Properties of Self-Assembling Nucleopeptides

Margaret Rzucidlo, Sarah Murphy, Chloe Falls

Faculty Mentors: Amanda Harper-Leatherman, Jillian Smith-Carpenter

Booth: 92

This research was also presented at *American Chemical Society Spring 2023*

Abstract:

Self-assembled peptides have many applications within the biomedical field and in nanoelectronics due to their biocompatibility and the ease to synthesize various chemical functionalities into the peptides. The self-assembly process can result in the formation of different nanostructures, as well as macroscopic structures, with a range of applications. While many applications for self-assembling peptides have been found, more characterization of the properties of these self-assembling peptides is still needed. Our research looks at self-assembled nucleopeptides such as g-KLVFFAE-NH2, g-KLVFFAL-NH2, gs-GWWK-NH2, and gs-GKWW-NH2. g-KLVFFAE-NH2 was compared with g-KLVFFAL-NH2 to determine if changing one amino acid (E versus L) had an impact on conductivity. These peptides were also compared with the acetylated (ac) versions of the peptides. The guanosine (gs) peptides were used to analyze if changing the order of the amino acids caused a change in conductivity. The method we used to measure conductivity is interdigitated electrodes as they allow us to get a direct measurement of the conductivity for each peptide.

Characterizing Surface Thiol Accessibility on Self-Assembling Peptides

Katherine Eighmy, Philip Scali

Faculty Mentor: Jillian Smith-Carpenter

Booth: 93

This research was supported by the Mancini Fund and the Hardiman Scholars

Abstract:

In the field of supramolecular chemistry, work is being done to characterize the reactivity of self-assembling peptide surfaces. Previous results from our lab, involving the dithioacetyl modified peptide, (SAc)2-KLVFFAQ-NH2, have characterized a thiol exchange reaction that occurred on the surface of the self-assembled nanofiber. This semester, we aimed to further extend our knowledge of thiol chemistry on the surface of nanofibers using a peptide that does not need to be chemically modified. In the current study, we explore the accessibility of cysteine thiol groups on the external face of self-assembling peptides. Our project aims to quantify the thiol accessibility of the C-terminus versus the N-terminus of a self-assembling peptide. We adapted the Ellman's assay to determine the concentration of accessible thiols in these two different peptides, Ac-CKLVFFAQ-NH2 and Ac-KLVFFAQC-NH2. In addition to the Ellman's assay, we performed other structural analysis, such as infrared spectroscopy, circular dichroism, and transmission electron microscopy imaging, to characterize the supramolecular structure of these peptides.

Characterizing the Chemistry of Self-Assembling Nucleopeptide Systems

Sarah O'Neill, Julianna Manson, Bianca Pineiro, Rishi Black

Faculty Mentor: Jillian Smith-Carpenter

Booth: 94

This research was also presented at *American Chemical Society Fall 2022 Conference*

This research was supported by the Hardiman Scholars

Abstract:

The Smith-Carpenter lab has developed short, self-assembling peptides that have been modified on the N-terminus with guanosine. These nucleopeptides combine the self-assembling properties of short peptides and hydrogen bonding recognition along the Hoogsteen face of guanosine to form nanostructures with different higher-order guanosine architectures dependent on their sequence and C-terminus chemistry. We characterized these higher ordered guanosine-based structures, such as G-quartets or G-ribbons, by using infrared spectroscopy and circular dichroism. Additionally, we developed 1H-NMR techniques to track the early non-covalent interactions that drive nucleopeptide aggregation. Previous studies have shown that G-quadruplex containing structures can interact with a hemin cofactor in the presence of hydrogen peroxide and catalyze the oxidation of 2,2-azino-bis(3-ethylbenzothiazoline-6-sulfonic acid) (ABTS). Our lab has used this ABTS assay to characterize the catalytic potential of the nucleopeptide hypothesized to form G-quartets and compare it to other G-quadruplex containing higher order assemblies. We have characterized the kinetics of this ABTS oxidation by the nucleopeptides in the presence and absence of the hemin cofactor. Our work underscores the importance of supramolecular surfaces of nucleopeptides to facilitate chemical reactions.

Preparation and Characterization of First-row Transition Metal ONO Pincer Complexes Based on a Bis-imidazole Precursor

Abby Araujo, Natalia Bertolotti, Michael Corbett, Connor Padover, Stephanie Coulombe, Samantha Erickson, Joseph Trucchio, Audrey Wheeler

Faculty Mentors: John Miecznikowski, Olivier Nicaise

Booth: 95

This research was supported by the Mancini Fund, Jean Dreyfus Award to Natalia Bertolottti

Abstract:

We have developed and synthesized a tridentate pincer ligand precursor, which possesses two oxygen- and one nitrogen-donor functionalities (ONO), based on a bis-imidazole precursor. The tridentate ONO ligand, 1, incorporates a carbonyl-substituted imidazole functionality. We have prepared a flexible ligand system by employing the starting material 2,6-(dibromomethyl)pyridine to introduce a methylene linker into the pincer ligand precursor. We have metallated these ligand precursors to form cobalt(II) and nickel(II) complexes that contains this tridentate ligand. A detailed description of the preparation and characterization (NMR Spectroscopy) of the ligand precursor and of the metal complexes (X-ray crystallography), will be presented.

An Inexpensive Adaptation of a Commercial Microwave Reactor for Solid Phase Peptide Synthesis

Madelyn Coogan, Kelly Ross, Sarah Breslow

Faculty Mentor: Matthew Kubasik

Booth: 96

This research was also presented at *Northeast Regional Meeting of the American Chemical Society*

Abstract:

Microwave synthesis methods have been credited with accelerating the rates of chemical transformations with enhanced product purity. When paired with solid phase synthesis techniques, microwave reactors leverage the advantages of speed and purity with the convenience of synthesis in the solid phase. Unfortunately, commercial solid phase microwave units are expensive. We report here an inexpensive adaptation of a commercial microwave synthesis unit for the convenient manual solid phase peptide synthesis of of oligomers of α-aminoisobutyric acid (Aib). Aib is notoriously difficult to couple, in solution and on solid phase supports, due to the steric hindrance of its geminal methyl side chains. We have used our apparatus to successfully prepare oligomers of Aib up to the octamer level. MALDI-ToF mass spectrometry and NMR data of prepared Aib oligomers will be presented.

Intersecting SETs and Finite Geometry

Samantha Froonjian, Caitlin Woods, Lingran Zhang, Nicole Perugini

Faculty Mentor: Janet Striuli

Booth: 97

Abstract:

The game SET is a table card game in which each card is identified by 4 attributes. The 4 attributes are colors, shape, number, and filling. Each attribute can have 3 different values. Therefore, there are 81 cards. A SET is made of 3 cards. Within these 3 cards, each attribute must either have the same value or they have different values. Because there are 4 features, there are 4 kinds of different sets. We define a set of type 0 a set in which the cards have features that are all different. A set of type 1 is a set in which the cards have one feature that stay the same for each card. A set of type 2 is a set in which two features stay the same for all the cards. Finally, a set of type three is a set in which three features stay the same for each card. We want to count how many sets of type 1, sets of type 2, and sets of type 3 there are where the sets share no cards in common. In the process of doing so, we will use finite geometry.

Examining the Attrition of Adult Learners at Albertus Magnus College

Paige Young

Faculty Mentors: Laura McSweeney, Christopher Casement

Booth: 98

Abstract:

With the 2025 demographic cliff approaching and the value of a college degree under increasing scrutiny, adult learners are becoming populations of interest in higher education.* Albertus Magnus College, a private liberal arts institution in New Haven, CT, prides itself on serving non-traditional students and has conferred more than 7,000 degrees to adult learners since the launch of its first targeted program in 1971.** Even with the institution's long-standing success with adult learners, there is a need to investigate and understand the enrollment patterns of this population.

Historical data from Albertus Magnus over a 5-year span (2016-2021) are used to explore the following questions:

- Do enrollment behaviors differ between adult and traditional undergraduates?
- Which factors are related to the attrition of adult learners?
- Is it possible to build a model which accurately identifies adult students that are "at-risk" of discontinuing their education?

Findings will help inform our understanding of this critical population of students and may be used to target intervention aimed at improving persistence.

*Grawe, Nathan. (2018). Demographics and the Demand for Higher Education. Johns Hopkins University Press.

**Albertus Magnus College, 2022-2023 Course Catalog: Accelerated Adult Undergraduate Program, p 11.

Elliptic and Hyperbolic Dynamics in Moon Billiards

Julia Courtney, Grace Gallagher

Faculty Mentor: Mark Demers

Booth: 99

This research was also presented at *2023 Nebraska Conference for Undergraduate Women in Mathematics*

Abstract:

Mathematical billiards are dynamical models of point particles colliding with fixed boundaries. They generate different types of behavior depending on the geometry of the boundary. This project concerns a class of billiards known as moon billiards. These billiard tables contain one concave and one convex boundary formed by the intersection of two circles of different radii. The goal of the project was to classify the dynamical behavior of these tables as a function of two parameters: the radius of the larger circle and the distance between the centers of the circles. Utilizing geometric and linear algebra analysis, the parameters of ergodicity and hyperbolicity were defined for various periodic orbits within a family of moon billiard tables and verified using MATLAB simulations. This research was carried out in the Summer of 2022 with funding from the National Science Foundation.

Analyzing the Efficacy of Modified Interactive Classroom Demonstrations in General Physics I

Brenna Petrelli

Faculty Mentors: Angela Biselli, Robert Nazarian

Booth: 100

Abstract:

The objective of General Physics I is for students to master the topics of mechanics and fluid dynamics, as well as developing skills that will translate to future STEM coursework. To achieve these goals, one element that has routinely been integrated into the classroom is Interactive Classroom Demonstrations (ICDs). The canonical ICD paradigm consists of four steps. Step 1: The professor introduces the topic and theory. Step 2: The ICD is described, and students develop hypotheses. Step 3: the ICD is conducted. Step 4: students revisit their initial hypotheses. We proposed and tested a modified paradigm (i.e. Step 5) that stressed the use of social media and large scale demonstrations. To test the efficacy of the modified ICD paradigm, two Fairfield University General Physics I classes were involved in the study. The classes alternated between canonical and modified ICD paradigms for six different topics throughout the semester and were subsequently tested on their comprehension and retention via three midterm exams and a final exam. Student understanding and engagement were quantified using these exams and a questionnaire through a computational analysis using python, for which we employed the Pandas library to organize, normalize and visualize grade data. Our prediction is that the modified paradigm will improve student comprehension and retention in General Physics I. Our statistical analysis is currently in progress and will be complete by the end of the semester.

Development of Bethe Heitler Monte Carlo Generator

Brenna Petrelli

Faculty Mentor: Angela Biselli

Booth: 101

This research was also presented at *American Physical Society Division of Nuclear Physics, October 2021 and Sigma Xi Summer Student Research Forum, Fairfield University, Summer 2021*

This research was supported by the National Science Foundation Award Number: 1812151; Project Title: RUI: Study of the Nucleon Structure Using Deeply Virtual Compton Scattering at Jefferson Lab

Abstract:

The study of the nucleon structure in terms of Generalized Parton Distributions via Deeply Virtual Compton Scattering has been the focus of an extensive experimental program at many laboratories, such as Jefferson Lab. When measuring DVCS, the Bethe Heitler (BH) process dominates the cross-section and contributes to the spin asymmetries by interference; therefore, a full understanding of the Bethe Heitler is essential for DVCS measurements. Of particular interest is the calculation of BH for the deuteron. For this purpose, I have developed a Python program to calculate the BH of the deuteron for all polarizations using prior formalism and new calculations. I will present the dependence of the BH cross-section in terms of the four independent variables, the four-momentum squared of the virtual photon (Q^2), the four-momentum squared that is transferred from the initial to the final deuteron (t), x Bjorken (x_B) and the phi angle between the leptonic and hadronic plane. I will discuss the phase space and kinematic limits. Ultimately this work will be used to develop a Montecarlo generator to be used with the CLAS12 simulation to study coherent DVCS acceptance.

Lensless Direct Contact Microscope with Self-Illuminated Pixels and Scalable FOV

Andrew Maresca

Faculty Mentors: David Winn, Angela Biselli

Booth: 102

This research was supported by the Mancini Fund

Abstract:

The field of microscopy has produced countless medical and scientific breakthroughs throughout its history. To further this progression, this project developed and built a novel lensless contact microscope using UV light and wavelength shifting materials. The contacted surface is illuminated by a monotonous array of wavelength shifter “pixels” which absorb UV light injected into the contact plate and are collimated to illuminate the field of view. The surfaces observed by this novel scope are imaged by a camera with as fine as 0.5 micron pixels mounted into a 3D printed design. The main problem addressed in the developmental process is that modern microscopy techniques often require sample slides and biopsies to be taken in order to examine a specimen or surface. The experimental design allows for instant imaging, a large scalable field of view, and reduced signal noise; things that are unavailable to many modern compound microscopes. This novel prototype has changed the field of microscopy by solving previous design challenges and opening the door to many applications including in vivo imaging, medical imaging without biopsy, and material surface examinations.

Tesla Turbine for Propulsion

Shahnt Madalian

Faculty Mentor: David Winn

Booth: 103

Abstract:

In this paper we revisited the Tesla Turbine to evaluate its performance in the scope of propulsion. The main method of testing was experimental; by fabricating an open source turbine and running it with an electric motor we collected data comparing thrust, rpm, and energy spent. This is the first step towards testing Tesla's greatest invention to the degree he wished he could in his time.

A Pedagogical Redesign of the Modern Physics Laboratory Course

Reagan Lafnitzegger

Faculty Mentor: Jonathan Stott

Booth: 104

Abstract:

The modern physics laboratory course at Fairfield University does not have a lab manual or clear learning goals which would be beneficial to the instructor and students in this course. To improve the situation, my project is to select the learning goals as well as a uniform pedagogical model for the course. The learning goals I chose are to increase self-agency, technology use, proper statistical analysis, and the student's overall understanding of the physics involved in the experiment. I chose a hybrid pedagogical model between the expository and inquiry styles. I hope that this will allow students to gain a better understanding of the material taught in a more straightforward manner.

Measuring the Coherence Length of a Light Source

Samuel Bayers

Faculty Mentor: Jonathan Stott

Booth: 105

Abstract:

The coherence length is the propagation distance over which a coherent wave maintains a specified degree of coherence. Generating an interference pattern between two sources of wave light, we obtain the coherence length. When combining light waves, the intensities of each source are proportional to the squared magnitude of each wave's respective electromagnetic field. To acquire coherence, it is necessary for a phase difference between the interfering waves, for which constructive and destructive interference can occur and a fringe pattern can be observed. Incoherence light lacks the difference in phase, where no fringes are shown and the intensities of light are combined. By utilizing the Michaelson interferometer, Advanced Physics Lab students at Fairfield University can measure the coherence length of a light source. In order to accurately measure the coherence length, (students move a mirror incrementally along a track of the interferometer, where the points of coherence length can be detected through computer software and averaged over the number of increments with time and distance). To be able to consistently and accurately measure the precision of coherence lengths, (a third mirror is implemented on the track arm of the optical path so that realigning between increments becomes more configurable). For a (light source), the coherence length of light was … Results still needed.

Transfer Learning Convolutional Neural Network for Black Hole Image Classification

Anne Arnold

Faculty Mentor: Pierre Christian

Booth: 106

Abstract:

Different theories of gravity and physical conditions around a black hole can produce markedly different black hole images. We developed a method to classify black hole images by constructing a neural network that is pre-trained with transfer learning methods. First, this neural network was trained to classify images of handwritten digits from the MNIST data set. Then, we tested this pre-trained neural network to organize test sets of labeled black hole images.

An Exploration of the Vertical Distribution of Mixing in a Submarine Canyon

James Vizzard

Faculty Mentor: Robert Nazarian

Booth: 107

This research was also presented at *American Physical Society Division of Fluid Dynamics Annual Meeting*

This research was supported by the Hardiman Scholars and the Lawrence Family Fund

Abstract:

Ocean mixing is a vital process that supports the global overturning circulation and biogeochemical processes. Despite this importance, significant questions remain about the underlying processes and the vertical distribution of mixing. Here, we consider the dissipation due to internal tides (internal waves at the tidal frequency) interacting with a submarine canyon, which has previously been shown to be a hotspot for mixing. Using both observations and a high-resolution simulation of the Eel Canyon-Mendocino Ridge system, we examine the magnitude of and processes that support internal wave-driven mixing over the region. We have found that the simulations match well with observations, suggesting that the internal tides present in the model are the primary driver of observed dissipation. Given the agreement between the observations and model, we have additionally used the model to understand the energetics within the canyon, the vertical and horizontal distribution of dissipation, and the vertical structure of internal waves through temporal and cross sectional analysis. We have shown that in Eel Canyon, dissipation occurs up to 400m above the floor of the canyon which is a larger portion of the water column when compared to other regions of the ocean. Dissipation was also found to be most significant over the thalweg of the canyon. We have found that energy propagates up from Mendocino Ridge towards Eel Canyon and then turns up the canyon which is consistent with past studies. Our developing understanding of the processes by which the internal tides deposit their energy to mixing, as well as the vertical structure of this mixing, will inform future parameterizations of mixing in next-generation ocean models.

Future Trends in Precipitation over Northern Mexico

Brody Matijevic

Faculty Mentor: Robert Nazarian

Booth: 108

Abstract:

Northern Mexico is home to more than 32 million people and has significant agricultural and economic importance for the country. The region includes three distinct hydroclimatic regions, all of which regularly experience severe droughts and flooding, with substantial socioeconomic impacts. To date, little work has been done to characterize future trends in both mean and extreme precipitation over Northern Mexico. To fill this gap, we investigate projected precipitation trends over the region in the NA-CORDEX ensemble of simulations. In order to determine whether the NA-CORDEX ensemble adequately captures the physics over the region, we test the historical simulations against satellite observations from the Tropical Rainfall Measuring Mission (TRMM). The observational period ran from 1998 to 2019 and latitudinally spans 50S to 50N. There is excellent agreement between the observations and simulations for the magnitude and spatial pattern of both mean and extreme precipitation. By the end of the century, simulations forced with a high emissions scenario project that both mean and extreme precipitation will decrease to the west and increase to the east of the Sierra Madre Highlands, decreasing the zonal gradient in precipitation. These results suggest that the extreme precipitation-related issues that the region faces, such as drought and flooding, will increase significantly by the end of the century, with implications for the agricultural sector, economy, and infrastructure.

Investigating Future Trends in Thermodynamically Driven Extreme Precipitation in the United States

Carissa Agostino

Faculty Mentor: Robert Nazarian

Booth: 109

Track: Environment and Sustainability

Abstract:

The continental United States is densely populated with lots of human activity and industries. As the Earth warms, the rate of precipitation is projected to increase as warm air can hold more water vapor. Previous studies have shown that areas with high population densities are expected to experience more frequent and more intense precipitation through the end of the century; approximately a 7% increase in precipitation for every degree of warming. This study investigates the increase in precipitation over seven unique, hydrological regions of the contiguous United States in both simulations and observations. We found that the 99th percentile of precipitation is expected to increase between 10-30 mm across the contiguous United States through the end of the century. We also found that coastline areas are expected to see a greater increase in extreme precipitation compared to inland regions.

Recognizing misinformation: Can knowledge of the misinformation effect improve eyewitness testimony?

Liana Marino

Faculty Mentor: Jessica Karanian

Booth: 110

This research was supported by the Dr. Kathleen B. Trainor Psychology Fellowship

Abstract:

This misinformation effect is a human memory impairment in which memory is altered as a result of new and inaccurate information presented after the original event. This is a threat to eyewitness testimonies that can result in false accusations and unjust imprisonments. How can we limit this effect? This study investigates whether knowledge of the misinformation effect makes mock eyewitnesses less suscpetible to misinformation. In this between-subject design, participants either watched a video about the misinformation effect or a control video. Then, all participants watched a fictional burglary and listened to an audio recording that contained misinformation about the burglary. Finally, participants completed a final memory test about the events of the buglary. Given previous research on the misinformation effect and memory warnings, I hypothesized that individuals educated on the misinformation effect would be less susceptible to selecting misinformation on the final memory test. Results will be discussed.

Give It a Try: The Interpersonal Consequences of Bad Recommendations

Caroline Russo

Faculty Mentor: Kathleen Tomlin

Booth: 111

This research was supported by the McGualey Family Faculty Student Research Fund

Abstract:

Individuals' decisions to try new products or activities are often informed by recommendations from others. Scholars in the field of consumer behavior have studied the different types of these "word-of-mouth" (WOM) processes and their effectiveness, but little is known about what happens after the WOM exchange. Recommendations frequently occur between close friends (e.g., "You should watch this new show!") and can either be successes (e.g., the show was enjoyed) or failures (e.g., the show was disliked). We explore the potential relational impact of such WOM successes and failures. In particular, we explore: 1) recommendation-receivers' feelings of closeness to the recommendation-sender and 2) the degree to which they believe the recommendation-sender knows them well. We also examine the moderating role of recommendation focus (i.e., whether the recommendation was directed to only the receiver or whether it was made as broad statement). Utilizing a mixed (between and within participants) design, administered through Qualtrics, pilot data from a Fairfield student population and a larger Prolific sample will be presented.

The Role of Test Anxiety and Inattention on the Relationship between Rumination and IQ Performance

Ava Holmes, Alex Goetz, Sydney Timchak, Katherine Chaves-Ortiz

Faculty Mentor: Kerry Cannity

Booth: 112

This research was also presented at *2023 American Psychological Association Convention*

This research was supported by the Dr. Kathleen B. Trainor Psychology Fellowship, the Earl and Hildagunda Brinkman Foundation, and the Science Institute of Fairfield University

Abstract:

Recent research has highlighted the negative effects of test anxiety and attentional problems on academic and cognitive performance. Test anxiety can interfere with classwork and exams and also is linked to problems with IQ performance, particularly on nonverbal reasoning and processing speed tasks. The effect of attentional problems (including ADHD) on IQ performance is somewhat weaker.

This study examined the mediational role of test anxiety and inattention on the relationship between rumination and IQ performance. Participants included 77 undergraduates (56% female) who were randomly assigned to receive either a rumination induction or a visualization exercise (control condition) and then complete eight subtests from the Wechsler Adult Intelligence Scale (WAIS-IV). We hypothesized that in addition to the negative effect of the rumination exercise on IQ performance, both test anxiety and attention would have a significant mediation effect. Results indicated a significant moderate positive correlation between test anxiety and inattention. While there were few differences in performance between the rumination and control conditions, those in the rumination condition performed significantly more poorly on the Symbol Search subtest and Processing Speed Index. Notably, while attention problems did not significantly affect the relationship between rumination and IQ performance, test anxiety showed a trend towards a mediation effect.

These findings suggest that while modern IQ testing may be resilient against interference from attentional problems, test anxiety could have a greater negative effect. These initial results would benefit from further study, and broader considerations for assessment and treatment of test anxiety also are discussed.

The Stability of Immediate and Delayed Memory Against Anxiety and Attention Problems

Alexandra Goetz, Katherine Chaves-Ortiz, Ava Holmes, Sydney Timchak

Faculty Mentor: Kerry Cannity

Booth: 113

This research was also presented at *Eastern Psychological Association Conference*

This research was supported by the Dr. Kathleen B. Trainor Psychology Fellowship and the Science Institute of Fairfield University

Abstract:

Research has identified numerous areas in which mood and attention can have a negative impact on cognitive performance. Alternatively, trait mindfulness and mindfulness interventions appear to have some beneficial effect on cognitive performance, particularly in reducing interference in memory from stress or mood. In this study, we examined how participants would perform on a brief neuropsychological assessment battery following a negative mood induction via video. We also explored how brief mindfulness training or pre-existing anxiety or attention problems might affect performance. We found a statistically significant small to moderate positive correlation between trait anxiety and attentional problems. Also, working memory showed a moderate positive correlation with immediate memory and a small to moderate positive correlation with long-term memory. In addition, immediate and long-term memory were significantly positively correlated to a moderate degree. Despite the impact of mindfulness and negative mood on cognition in other studies, the performance of healthy undergraduates on a commonly used neuropsychological measure (RBANS) showed significant resistance to manipulations such as mindfulness training, negative mood induction, and pre-existing trait anxiety and attentional problems. This finding contradicts previous research on the deleterious effects of mood on working memory, immediate, and long-term memory and highlights the need for further research in this area.

Nostalgia’s Impact on Autobiographical Memory Accessibility Across the Adult Lifespan

Jenny Meyer

Faculty Mentor: Linda Henkel

Booth: 114

This research was also presented at *2023 Annual Association for Psychological Science Conference*

This research was supported by the Lawrence Family Fund and the McGualey Family Faculty Student Research Fund

Abstract:

Reminiscing about personal memories can evoke nostalgic feelings, which in turn can provide psychological comfort during transitional periods and improve mental health and well-being. Less is known about nostalgia's impact on cognition. We examined whether nostalgic feelings can impact autobiographical memory accessibility and specificity across the adult lifespan. Young (18-20 yrs), middle aged (50-60 yrs), and older adults (70+ years) watched either a nostalgia-inducing video (showing photos of popular items from their childhood) or a control video (showing photos of popular items from contemporary times). They then did an autobiographical memory task where they had to think of a memory in response to individual cue words as quickly as they could, describe their memory, and rate its qualities. Results showed that young adults' memories came to mind significantly quicker after watching the nostalgia video than the control video, but middle age adults were not influenced by the type of video, and older adults in the nostalgia condition were actually slower at remembering events than older adults in the control condition. Nostalgia may serve different functions at different stages of life. Future work is needed to determine whether older adults may generate too many memories after nostalgic videos to be quick at selecting one, or whether perhaps nostalgia has negative effects for some older adults.

Childhood trauma, psychopathology, and social cognition as predictors of IPV in college students

Annie Cozens, Marie Balemian, Sabrina J. Cassarino, Grace M. Foltin, Juliana Masiello, Alexis E. O'Shall, Nadia A. Tarhini

Faculty Mentor: Margaret M. McClure

Booth: 115

Abstract:

Intimate partner violence (IPV) can be physical, verbal or emotional aggression against a romantic partner. Research suggests that IPV is prevalent on college campuses, and is linked to negative mental health outcomes and later domestic violence. Research also suggests a relationship between IPV and traumatic childhood experiences, as well as current anxiety, depression, and personality pathology. Participants, recruited from the General Psychology course at Fairfield and were given course credit for participating, completed the Approach-Avoidance Task (AAT), a behavioral measure of social cognition, as well as a computerized battery of self-reports, including the Conflict in Adolescent Dating Relationships Inventory, Childhood Trauma Questionnaire, State Trait Anxiety Inventory, Beck Depression Inventory, Dimensional Assessment of Personality Pathology, State Trait Anger Expression Inventory, and Perceived Social Support. Results of this study could be used to develop interventions that aim to decrease the prevalence and psychological effects of IPV. Specifically on college campuses, these results could lead to interventions inside of the classroom, during extracurricular activities, and through counseling services, which might lessen the probability of the onset of IPV in college dating relationships and ensure ongoing support for students who have experienced childhood trauma, who may now be at risk of experiencing IPV in the future.

Characterizing factors for interruption of long-acting injectable antipsychotic treatment

Leif Alino

Faculty Mentor: Margaret M. McClure

Booth: 116

This research was supported by the Corrigan Scholars Fund

Abstract:

Psychotic disorders are characterized by relapses over the course of illness, presenting dangers to patients, requiring hospitalization, and prolonging illness. Antipsychotic medication adherence is essential to treat psychotic disorders and interruption of medication is associated with increased risk of relapse. Long-acting injectable (LAI) antipsychotics have demonstrated improved rates of interruption relative to oral treatment and prolonged the time period until initial hospitalization; still, LAI interruption persists at a high rate. To characterize interruption of LAI, we utilized outpatient data from Zucker Hillside Hospital (ZHH; n =1378) and the Biomarkers of Relapse in Schizophrenia (BORIS) cohort (n =111) to identify informative and clinically actionable patterns of variables associated with discontinuation. To this end, we will produce survival curves of LAI discontinuation in the ZHH cohort and employ a time-to-event analysis in the ZHH and BORIS cohort to associate baseline covariates with discontinuation and hospitalization outcomes. Baseline covariates of interest include sex, age, affective/non-affective psychosis, BMI, time since last hospitalization, first/second generation antipsychotic, and scheduled LAI interval at onset. We will also leverage 3-month longitudinal data from BORIS on cognition, stress, resilience, and drug attitudes to predict outcomes of interest. Our results may inform future clinical interventions to reduce LAI discontinuation.

Social Cognition and Childhood Trauma as Risk Factors for IPV in College Dating Relationships

Marie Balemian, Kellyn Kuczarski, Lauren Adams, Madeleine Carter, Robert LaPorta, Megan MacGilvray

Faculty Mentor: Margaret M. McClure

Booth: 117

Abstract:

Intimate partner violence (IPV) is violence within a relationship that consists of either physical, emotional, or verbal aggression. Prior studies have indicated that IPV perpetration and victimization is a prevalent issue in college students, and that traumatic childhood experiences are related to IPV, as are mental health concerns such as anxiety, depression and emotion dysregulation. 107 undergraduate students were recruited from introductory psychology courses, with students who had not begun dating completing all measures besides the Conflict in Dating Relationships Inventory (CADRI). Participants completed a self-report battery consisting of the Conflict in Adolescent Dating Relationships Inventory, the Childhood Trauma Questionnaire, the State-Trait Anxiety Inventory, and the Beck Depression Inventory. There was a strong positive correlation between IPV perpetration and victimization ($r=.862$, $p<.01$). Additionally, depression was significantly correlated with childhood emotional abuse ($r=.486$, $p<.01$). Anxiety was positively correlated with both IPV perpetration ($r=.338$, $p<.01$) and victimization ($r=.334$, $p<.01$), as well as with childhood emotional abuse ($r=.288$, $p<.01$) and emotional neglect ($r=.412$, $p<.01$). These results support previous research showing high rates of IPV prevalence in college students. Additionally, these findings suggest that childhood trauma is related to IPV victimization and perpetration, as well as heightened rates of anxiety and depression.

Impact of Exercise on Mental Health

Katherine Samonek

Faculty Mentor: Margaret M. McClure

Booth: 118

Track: Community-Engaged Learning

This research was also presented at *Association for Behavioral and Cognitive Therapies*

Abstract:

College students experience high rates of anxiety and depression, yet detailed studies on the impact of anaerobic exercise to mitigate and reduce symptoms in this population are insufficient. There is evidence that aerobic exercise reduces these symptoms, though there is limited evidence that anaerobic exercise yields similar results. Participants (N=46; mean age= 19.6, SD=1.29 years), were recruited from the recreational center and completed the Becker Depression Inventory and theState Trait Anxiety Inventory pre-exercise, and the Brief Mood Introspection Scale both pre-and post-exercise. We examined differences in mood within- and between strength training alone and strength training plus aerobic exercise groups. There was a significant increase in pleasant mood pre-workout (M=-3.64; SD=6.81) and pleasant mood post-workout (M=-9.04; SD=6.69); [t(44) = 5.576, p = .000]) across all participants; however, those exercising at a moderate intensity felt the most pleasant (M=-6.96; SD=6.33) compared to light (M=-7.60; SD=2.19) and heavy intensities (M=-13.43; SD=6.55). All participants despite level of training intensity felt more tired post-workout (M=3.78; SD=2.97) than they did pre-workout (M=5.69; SD=3.48; [t(44) = 3.789, p = .000]), however, those exercising at a higher intensity felt the most tired (M=1.79; SD=3.68) compared to light (M=4.40; SD=0.89) and moderate intensities (M=4.73; SD=2.25). This suggests that aerobic and anaerobic exercises at moderate intensity impact negative mood. Future research is warranted to determine if the impact is more substantial in a longitudinal study or when used as a therapeutic strategy for patients diagnosed with depressive and anxiety disorders.

How well do you know yourself?: Using the Subliminal Priming Task to assess people's awareness of their implicit attitudes

Bridget Conlon, Alessandra Mele, Francesca Klein

Faculty Mentor: Michael Andreychik

Booth: 119

This research was also presented at *Eastern Psychological Association Conference*

Abstract:

Recent research has challenged the assumption that we are not aware of our implicit attitudes by showing that, when asked, people are quite accurate at predicting how they will perform on measures of implicit attitudes. Because this research has focused on only some specific measures of implicit attitudes, however, it is not yet clear what these results mean. Perhaps people's predictive accuracy does mean that they are aware of their implicit attitudes in a general sense. But, equally likely is that people's accuracy means that they are aware of whatever it is that the specific measures used are measuring. In this study we are adding to existing research by asking if people can predict their performance on a different measure of implicit attitudes, the subliminal priming test (SPT). The subliminal priming test taps into participants' implicit attitudes by measuring responses to stimuli flashed so quickly that participants are not consciously aware of what is being activated. We had about 100 undergraduate students predict what SPTs would reveal about their attitudes towards five different groups such as cat vs dog, old vs young, etc., and then take the SPTs. The results showed that their predictions matched their scores on the SPT. This means that participants can predict their implicit attitudes independent of the task measuring those attitudes, increasing our confidence that people do have some awareness of their implicit attitudes.

Look on the Bright Side: Empathy for Others' Positive Emotions Reduces Burnout and Maintains Helping

Fiona Carter, Hailey Johnston, Genuine Skill Salcedo

Faculty Mentor: Michael Andreychik

Booth: 120

This research was also presented at *Eastern Psychological Association Conference.*

This research was supported by the Dr. Kathleen B. Trainor Psychology Fellowship

Abstract:

Previous research on the relationship between empathy and burnout among helping professionals has revealed that empathizing with others' negative emotions is associated with higher feelings of burnout while empathizing with their positive emotions is associated with lower levels of burnout. But, past research has failed to establish whether empathizing with others' positive emotions causes decreased burnout. To address this gap, we presented participants with a video depicting a woman who is both suffering and hopeful. Before watching the video, we instructed participants to adopt one of three perspectives: to either focus on the woman's suffering, her hopefulness, or both. Results showed that those in the hopefulness condition exhibited the same desire to help as those in the suffering condition while experiencing reduced levels of burnout compared to the suffering condition and the both suffering and hopeful condition.

The Effects of Social Isolation on Anxiety-like Behaviors and Spatial Memory in Male and Female Rats

Madeline Kitlas, Tatiana Mesrobian, Elizabeth Ricci, Jillian Bauknecht

Faculty Mentor: Shannon Harding

Booth: 121

This research was also presented at *Eastern Psychological Association Conference*

This research was supported by the McGualey Family Faculty Student Research Fund and the Earl and Hildagunda Brinkman Foundation

Abstract:

Our study examines how prolonged social isolation beginning in adolescence may impact anxiety-like behaviors and spatial memory using rats as a model, and specifically looking at sex differences. Thirty-two Long-Evans rats were divided into four groups (n=8 per group) based on sex and housing conditions: socially isolated males and females (SI-M and SI-F); and group-housed males and females (GH-M and GH-F). Anxiety-like behaviors were assessed using the elevated plus maze (EPM), social interaction tests, and the open field test (OFT); and spatial memory was assessed with the Morris Water Maze (MWM). We found that in the EPM, socially isolated males and females spent significantly less time in the open arms and made fewer arm entries than group-housed rats, suggesting heightened anxiety. Sex differences were seen in the OFT and sociability test, with females traveling a greater distance and spending more time with a novel object, suggesting more exploratory behavior. In the MWM, SI groups took longer to find the platform, regardless of sex. Overall, these findings suggest that social isolation beginning in adolescence has detrimental increases anxiety and impairs spatial memory, regardless of sex. Future work in our lab will assess regional differences in the brain in the enzyme GABA decarboxylase (GAD), a marker for GABA-ergic activity. These findings have important implications, given the prolonged social isolation experienced by teens during the COVID-19 pandemic.

The Effects of Taurine Supplementation on Behavior in Socially Isolated Male Rats

Elizabeth Ricci, Madeline Kitlas, Tatiana Mesrobian, Elani Gordon, Jillian Bauknecht

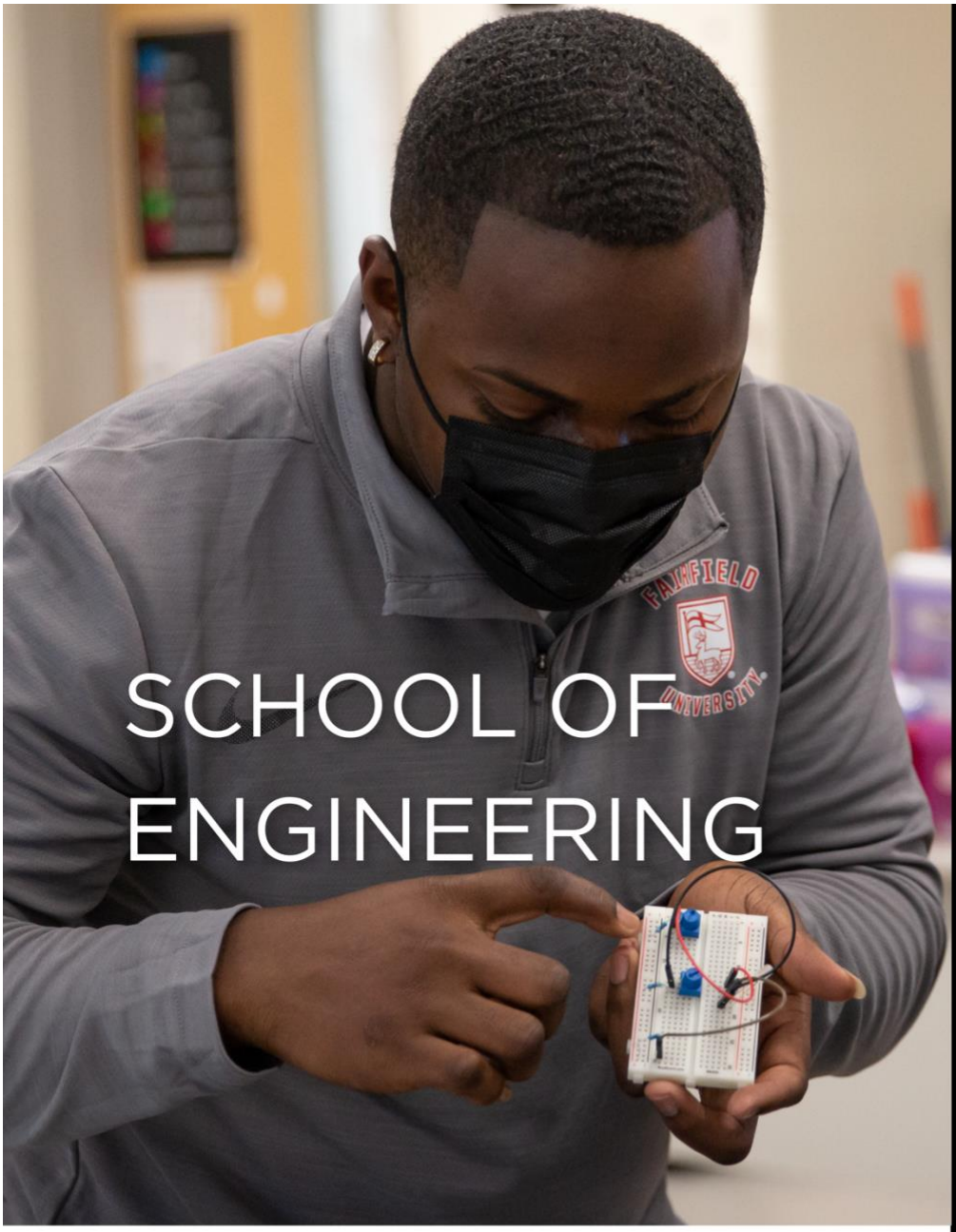
Faculty Mentor: Shannon Harding

Booth: 122

This research was also presented at *Neuron Conference*

Abstract:

Previous research from our lab has shown that social isolation beginning in adolescence increases anxiety-like behaviors and impairs spatial memory in male and female rats. The present study examined whether the dietary supplement taurine would improve behavior in socially isolated males. Twenty-four male Long Evans rats arrived on post-natal day (P)22, and were assigned housing conditions at the start of adolescence (P28). Rats were socially isolated (SI: 1 per cage), or housed in groups (GH: 3 per cage) throughout the adolescent period. They also received water or 1% taurine supplementation throughout the study, resulting in four groups (n=6 per group): SI+taurine, SI+water, GH+taurine, GH+water. Four different behavioral tests were conducted in adulthood to assess behavior: open field and elevated plus maze for anxiety-like behaviors, forced swim test for depressive-like behaviors, and Morris water maze for spatial memory. Preliminary analysis suggests social isolation increased anxiety-like behaviors, but that taurine had no effect. We predict that the socially isolated rats receiving taurine will show reduced depressive-like behaviors and improved spatial memory compared to isolated rats receiving water. After the data are collected, brain tissue will be shared with the Department of Chemistry & Biochemistry for further analysis. These findings have important implications given the number of adolescents experiencing social isolation during the COVID-19 pandemic.



INNOVATIVE RESEARCH SYMPOSIUM

Fairfield University

School of Engineering

Design of a Testbed for Soilless Root Vegetable Growth in Microgravity

Manjot Singh, Andrew Conti, Sergey Shemetun, MIchael Tedesco

Faculty Mentor: Andres Carrano

Booth: 123

This research was supported by the Hardiman Scholars and the CT NASA Space Grant

Abstract:

Long-duration space missions will require crops to be grown while in space, but current approaches present some limitations. Existing horticultural systems, such as VEGGIE, use the ISS potable water system, cannot recover transpired humidity, and are mostly limited to leafy vegetables. Also, valuable crew time is needed for all aspects of planting, cleaning, disposal, etc. so that must be minimized. A new design is proposed that will accommodate root system expansion, ensure proper nutrient delivery, as well as support media and fit into an ISS rack. Developing a functional module for root vegetables to grow in microgravity conditions and identifying the optimal growth parameters will support NASA's mission for deep space exploration.

Investigation of Optimal Growth Conditions for Root Vegetables in Microgravity Environments

Manjot Singh, Andrew Conti, Sergey Shemetun

Faculty Mentor: Andres Carrano

Booth: 124

Abstract:

Controlled and reliable growth of root vegetables is important for manned deep space exploration, to fully sustain nutritional expectations for the crew aboard. Current systems, such as VEGGIE by NASA have been proven successful at growing certain leafy vegetables, but a more complete and richer diet is needed for long duration missions. The challenges associated with growing root vegetables in space include maintaining proper water and nutrient delivery, lighting conditions, and support structure for the root zone growth in microgravity environments where traditional soil media cannot be used. Developing a functional module for root vegetables to grow in microgravity conditions and identifying the optimal growth parameters will support NASA's mission for deep space exploration.

Preformed Adhesives for Optomechanical Applications

Laura Zaccardi, Sophia Mascia, Robert Galusha, Adam Krzywosz

Faculty Mentor: Andrew Judge

Booth: 125

This research was supported by the Hardiman Scholars

Abstract:

Our project focuses on analyzing different types of epoxies and aims at measuring their effectiveness in securing glass lenses and mirrors to an apparatus. Glass lenses and mirrors are required parts for numerous optical applications. These parts are brittle so they must be packed strongly to survive vibration and thermal effects without impacting the sub-nanometer level of precision needed for their end application. The flexure joints that secure the lenses in position are the main testing component of this project. In order to test the tear strength, vibration, and outgassing, three important factors that affect the quality of the end application, we will first analyze the data via a model built using ANSYS, a well-known engineering simulation and 3D design software. We plan to test our flexure joints with the Instron testing machine to solve for the tear strength. A vibration (shaker) table will be used in order to test how the adhesives hold when exposed to high frequency vibrations.

Water Connections for Low Noise Dynamic Applications

Kafo Bagagnan, Morwan Abbe, Kobi Okpoti

Faculty Mentor: Andrew Judge

Booth: 126

This research was supported by the Hardiman Scholars

Abstract:

This research project consists of improving the error margin found in a precision mechatronic system. This process is so important because the better mechatronics becomes, the more capable the systems can be. For example, in a high-precision, magnetic levitation system with extreme velocity and acceleration, all components and processes contributing to the precision of the equipment must be optimized. The magnetic levitation system utilizes a current running through electromagnets which produces heat as a by-product. In order to maximize the use of the magnetic levitation system, a cooling system consisting of a liquid running with a cable slab is often used. All mechatronic system uses a kind of cooling mechanism. The vibration caused by the water-cooling system can cause errors in the system. The purpose of this research consists in identifying the source of the vibration in a precision mechatronic system and finding concepts and ways to mitigate the vibration. Our project will involve researching vibration in a cooling system which includes researching the cable slab, the valve connection, the water connections and fluid flow in order to figure out the best way to minimize the vibration.

Measurement of Human AI Trust Using Wearable Biosensor

Hien Tran, Lam Bui, Marco Pezzolla, Miguel Cuahuizo

Faculty Mentor: Danushka Bandara

Booth: 127

This research was also presented at *Northeast Bioengineering Conference - NEBEC*

Abstract:

Artificial Intelligence (AI) continues to grow as a field each year. Large corporations, our home appliances, and even our schools all utilize this technology in the pursuit of enhancing productivity. Since a lot of decisions in our day to day lives are taken by machines, it is important to know how much humans trust these decisions. In this study, we focused on how the human-AI interactions affect human trust in AI-decisions. In order to measure trust between human and machine, we developed and conducted an experiment with a group of human subjects (n=7) to collect physiological data as an objective metric of trust.

Animal Calls Detection Using Neural Network

Hisham Juneidi

Faculty Mentor: Danushka Bandara

Booth: 128

Abstract:

This project aims to help biologists study Tigers' and Leopards' behaviors. The objective of this project is using Machine Learning (ML) and other software to identify when animal calls happen in a recorded audio clip. Furthermore, we aim to automate the annotation process of animal calls, which will help downstream analysis. The first step is to prepare audio clips by removing unwanted noise and clipping the audio to three-second segments. The second step is building the dataset. Since we need to train the ML model on animal calls and silence, we convert the three-second audio clips to spectrograms. These spectrograms are then used to build the dataset for the detector. In the third step, we use a Convolutional Neural Network (CNN) to train a model to detect the difference between animal calls and other sounds/silence. When the training is done, audio clips that used to take hundreds of hours for annotations can take a few seconds. The system can process multiple audio clips at a time and provide annotations and call counts for each clip. This process can mitigate the annotation time from 74 minutes, which is the average time for annotating one hour audio clip, to just 0.24 minute per audio clip.

Eye Gaze Based Navigation System For Virtual Reality Systems

Mariana Antaya, Phat Tran, Keshav Sule, Ashley Milone, Noah Cunningham

Faculty Mentor: Danushka Bandara

Booth: 129

Track: Interdisciplinary Studies

Abstract:

Virtual reality (VR) is a simulated experience that gives the user an immersive feel of a virtual world. However, we lack enough studies to explore the various modalities and capabilities of virtual reality. Human and machine interaction has seen major developments over the last few decades and needs further exploration within virtual environments. The goal of this project is to create a working 3D navigation system, which will utilize keyboard controls, then we will integrate the eyetracker to enable eye gaze based controls. People with mobility limitations could use the software we develop within the virtual space as well. By combining these two cutting edge fields of virtual reality and eyetracking, we hope to provide new interaction modalities within virtual environments.

Human-AI Interaction

Robert Dillon, Noor Khattak,

Faculty Mentor: Danushka Bandara

Booth: 130

Abstract:

In the experimental design process of this project, we used four programs to develop the experiment: PsychoPy, VS Code, NIRx, and Tobii Pro Eye Tracking. By integrating these four programs with each other, data is collected from a subject through eye movement, brain activity, button clicks, and response time. As a subject goes through the slides, they are administered with several different questions, images, and AI responses in order to test their trust in the AI system. This trust is then measured by a 'Confidence Slider' as well as a question asking how the subject decided on their answer. Our research project analyzes the interaction between a human subject and the AI system's different response types to see the level of trust which humans have in AI. Our study aims to show how different response types from the AI system impact the subject's trust in the system, and the methods in which a greater trust in AI systems can be developed.

UAV Navigation in GPS-Denied Environment

Thomas McKenzie, Kyle Hochenberger, Alexa Fiorica, James Kueny, Eddie Pizarro, Eddie Pizarro,

Faculty Mentor: Djedjiga Belfadel

Booth: 131

This research was also presented at *American Society for Engineering Education*

This research was supported by the Hardiman Scholars

Abstract:

This project aims to provide an alternative navigation system to enable a swarm of drones to conduct autonomous missions in a global positioning system (GPS) denied environment. The solution proposed is a vision-based navigation system that combines data from onboard sensors such as the IMU and optical flow sensor, using the Extended Kalman Filter (EKF) to provide real-time position and orientation updates. Simulations were conducted with three drones to test the efficacy of the proposed system, and results showed that it can provide reliable navigation information in challenging situations. MATLAB and Simulink were used for coding and simulation. This project contributes to the field of aerospace engineering and has practical applications in various military and civilian operations, such as reconnaissance, surveillance, disaster observation, and rescue missions in extreme environments. In conclusion, this project demonstrates the feasibility of using a vision-based navigation system to provide accurate navigation information in GPS-denied environments for a swarm of drones, which could improve the efficiency of autonomous missions and open new possibilities in various operations.

Financial Data Mining Project

Victor Zurowski, Andrew Samarro, David McNulty, Dafne Lazaro

Faculty Mentor: Douglas Lyon

Booth: 132

Abstract:

The Financial Data Mining project aims to design a web-based interface to display financial data. The design experience is constrained by several factors, including: free cloud service, valuation metrics (PEGY ratio, insider buying, SHARPE ratio, and high-yield bonds) and an update rate that enables refresh of data every 24 hours. The standards of the Association of Computing Machinery (ACM) are followed in the deployment of our solution. The project will be designed to benefit personal investors who wish to see the specific financial data provided in one place, free of cost, and will be developed by utilizing the following technologies: Virtual Ubuntu computing instances, Apache web servers, ssh, scp, HTML, Python, Java, and JavaScript.

Money Management and Complex Option Strategies

Jason Rosales

Faculty Mentor: Douglas Lyon

Booth: 133

Abstract:

In regards to portfolio and money management there are many different ideologies and strategies that are exercised for the purpose of growth. In this context the concept known as the Kelly Criterion will be looked at and further analyzed with regard to money management, trading strategies, and its general potential application to grow portfolios. The Kelly Criterion focuses on finding the optimal betting or risk amount based on probabilities and return ratios. In order to better picture and assess the impacts of this concept numerous trial runs and attempts of an example scenario would have to be run and then visualized to display the behavior of a person's balance (or equivalence of portfolio). Java and Python were both utilized to achieve both of these goals of data generation and displaying. As a result of these trial simulations, given the proper probability parameters the application of the Kelly Criterion showed to reduce the risk of ruin (0 balance) by never hitting that point and averaging a positive return rate on large trial simulations. This serves as a potential valuable use as the entire purpose of the Kelly Criterion is to find the optimal risk size given the context of certain probability parameters while simultaneously straying away from the risk of ruin. It expands the possibility for the application it has to trading strategies within a person's portfolio given similar probability parameters.

The Chiral Sorting of Single-walled Carbon Nanotubes Using Tripeptides

Jack Devlin

Faculty Mentor: Isaac Macwan

Booth: 134

This research was also presented at *Materials Research Society, American Society For Engineering Education*

This research was supported by the Hardiman Scholars

Abstract:

The first part of this study focuses on analyzing the interactions of tripeptides, with glycine being the repeated amino acid in each tripeptide, and single-walled carbon nanotubes (SWCNT). It was previously found by studying the bacterial protein, flagellin, that glycine plays a crucial role in distinguishing semi-conducting carbon nanotubes (CNTs) from metallic carbon nanotubes. This ultimately has to do with the chirality of the carbon nanotube (chiral vectors being the number of carbon atoms in the X and Y direction). If the chiral vectors are equal or the difference between them is a multiple of three then the resulting CNTs will be metallic and depending on their orientation they take the form of an arm-chair or zig-zag CNT. If the chiral vectors are not a multiple of three, then the CNT has a semiconducting behavior. For this experiment we will be using a mixture of both metallic and semiconducting CNTs in order to see how the tripeptides having glycine as the middle residue sort through them. Though this has been simulated and published before by our group to address the initial interactions between glycine and the SWCNTs, it has never been synthesized/experimented in a laboratory before. We have worked with nine different combinations of tripeptides, out of which four tripeptides (DGY, TGY, TGK and NGE) showed a potential to sort SWNTs, the interactions for which are quantified using a UV/vis spectrometer.

Molecular Interactions at the Interface of C - reactive protein (CRP) and Poly Vinyl Alcohol (PVA) in the Presence of Carbon Nanotubes

Ryan Baker

Faculty Mentor: Isaac Macwan

Booth: 135

This research was also presented at *Materials Research Society Conference Fall 2022 Boston*

This research was supported by the Hardiman Scholars

Abstract:

The goal of this project is to simulate the interactions between an inflammatory protein, C-reactive Protein (CRP), a polymer, Polyvinyl Alcohol (PVA), and Carbon Nanotubes (CNTs) using molecular dynamics through simulation software called Visual Molecular Dynamics (VMD) and nanoscale dynamics software called NAMD. Atomic-level models of CRP protein and PVA are acquired through the protein data bank database and a pristine CNT molecule is modeled through a Nanotube builder modeling program within VMD software. Once simulated, the molecular trajectories of the interactions will be used to analyze the energies and forces at the interface of these molecules to understand the bio-nano interface. A nanocomposite material consisting of electrospun PVA and CNTs will be synthesized in the laboratory using electrospinning equipment, which will further be experimentally analyzed using Electrochemical Impedance Spectroscopy (EIS). Using this information, a biosensor will be created to detect the level of CRP in blood plasma. Up to this point, this simulation has been completed and analysis is soon to be finished. Once developed, this biosensor can be used to detect diseases in cases like heart disease much earlier than other current techniques. Levels of CRP in blood plasma can be an indicator of disease, thus the data found through this research will help understand interactions between molecules to create a biosensor.

Electronic Interfacing of Porous Nanofibrous Scaffolds

Noor Khattak, Sahil Patel, Abraham Castillo, Justin Bard

Faculty Mentor: Isaac Macwan

Booth: 136

This research was also presented at *American Society for Engineering Education (ASEE) Conference Zone I*

This research was supported by the Hardiman Scholars

Abstract:

The goal of this research project is to create a biocompatible and conductive material that is capable of housing and stimulating biological materials. The process will begin with the dispersion of two solutions containing Polyvinyl Alcohol (PVA) in Deionized (DI) water (control), and another containing PVA and Graphene Oxide (GO) in DI water. We will then electrospin the solutions using specific project parameters (i.e. voltage applied, flow rate, etc) to create nanofibrous scaffolds. The surface topology and other characteristics of this film will be analyzed using an Atomic Force Microscope (AFM) and Scanning Electron Microscope (SEM), and the impedance and conductivity would be determined using Electrochemical Impedance Spectroscopy (EIS). Its ability to pass a current will be demonstrated using a PCB or breadboard with the goal of synthesizing a structurally sound film with conductance properties similar to, or even exceeding, that of current materials used for electrical signal transmission.

Poly Vinyl Alcohol and Carbon Nanotube based Scaffolds for Applications in Biosensors

Ryan Jaworski

Faculty Mentor: Isaac Macwan

Booth: 137

This research was also presented at *2023 Materials Research Society Fall Meeting*

This research was supported by the Hardiman Scholars

Abstract:

Carbon nanotubes (CNT), a carbon allotrope, is a nanomaterial that has a high potential of being used in various different types of applications in biomedical engineering. One technique that is used to create substrates containing nanomaterials is through the use of electrospinning. This work used electrospinning as a means to create nanofibrous scaffolds that could be useful in applications such as tissue engineering or in biosensing applications. In this study, two different forms of CNTs will be used, single-walled carbon nanotubes (SWCNTs), and multi-walled carbon nanotubes (MWCNTs).These nanomaterials are dispersed in deionized water along with PVA to create a viscous dispersion suitable for electrospinning. The synthesized scaffolds are characterized using atomic force microscopy (AFM), scanning electron microscopy (SEM), Electrochemical Impedance Spectroscopy (EIS), and compared to control samples without CNTs.

StagForms: A Home Grown Campus Form Builder

Daniel Reisman, Carson Swope, Brendan Daly, Remsfield Papillon

Faculty Mentor: Jeffrey Kramer

Booth: 138

Abstract:

StagForms is a customized form builder application created by our team that will allow Fairfield University students, faculty, and staff to create, submit, and use forms for various educational needs, such as surveys, questionnaires, and registration forms. It is designed to replace an outside source, 123FormBuilder, for which the University currently pays a subscription fee. In addition, StagForms will allow Fairfield University to control any data produced rather than by a third party. The ITS Help Desk will manage the application once deployed for Fairfield University. Using a Model-View-Controller architecture, the project is built using VueJS, Java Spring-boot, and MySQL.

Fairfield DQ: Flexible Data Quality Tool for Identifying Erroneous and Suspect Data

Chao Tan, Akul Khatri, Joseph Crowley

Faculty Mentor: Jeffrey Kramer

Booth: 139

Abstract:

The overall objectives of this research project are to create a system that allows users to upload data, facilitate uploads of feeds from other company's systems, compile uploaded data files into a form that can be analyzed on the server side, validate the data against specific rules, and create a user interface with components for a dashboard, user upload, rules, and result in table sets. Additionally, the project aims to create a rule system on the server side so that data can be validated against specific rules and create a system for users to create rules. The data structures are designed to contain the result data set and any errors and exceptions generated during analysis, and methods to pass results from the server side to the front end are implemented. By achieving these objectives, the project will ensure that the quality of data used by organizations is accurate, complete, consistent, timely, and unique, thus enabling better business decisions that result in the growth of output.

Machine Learning Approaches for Automatic Characterization of Incline Treadmill and Walking Speed

Laia Vancells Lopez, Brigid Protzmann,

Faculty Mentor: John Drazan

Booth: 140

This research was also presented at *Northeast Bioengineering Conference (NEBEC)*

This research was supported by the Hardiman Scholars

Abstract:

The integration of instrumented insoles with machine learning techniques represents a potential breakthrough in the study of Achilles tendon loading, allowing researchers to collect data in non-laboratory environments. The purpose of this study is to evaluate the accuracy and feasibility of integrating instrumented insoles with machine learning algorithms by developing three models that predict treadmill incline and walking speed as a function of ground reaction forces (GRFs). Participants (n=15) were asked to perform treadmill exercises at varying treadmill incline (0-25%) and walking speed (0.8-1.6 m/s) conditions, with 5% and 0.4 m/s increments, respectively. A Long Short Term Memory Network (LSTM) with 3 channels (one for forefoot, one for midfoot, and one for heel) was used to perform multi-class classification of the recorded GRF data. The LSTMs were implemented in three distinct configurations, including a 3-class classification model for speed only, a 6-class classification model for speed and two grouped inclines (low=0-10%, high=15-25%), and an 18-class classification model for each combination of incline and speed. A 70-30 train validation split was used for evaluation. The resulting validation accuracies were 90%, 80%, and 50%, respectively. Overall, this study further demonstrates the potential of using machine learning and instrumented insoles for predicting Achilles tendon loading during exercise.

Validating Markerless Motion Tracking Approaches

John Minogue

Faculty Mentor: John Drazan

Booth: 141

This research was also presented at *Biomedical Engineering Society (BMES) Conference, Seattle, Washington*

This research was supported by the Hardiman Scholars

Abstract:

Current gold standard approaches for motion tracking find exceptional accuracy with marker-based systems containing high precision cameras, motion tracking labs, and attachable subject markers. Subjects must wear tight, non-reflective clothing and movements must be performed within the motion capture space. In addition to the plethora of equipment needed, setting up and calibrating subjects in marker-based spaces takes 20 to 30 minutes, which prevents high throughput capture of multiple subjects. These systems, while very accurate, are time intensive to use and cost tens to hundreds of thousands of dollars to purhcase, operate, and maintain.This inspired the emergence of marker-less motion tracking, which are more suitable for data collection outside of laboratory environments. It eliminates major usability barriers faced by marker-based systems including attachable subject markers, clothing restrictions, and time consumption. The main question arising from these marker-less systems pertains to their accuracy. While they successfully track human movement, their precision and accuracy will ultimately dictate the specific applications they can be used for. The goal of this project is to investigate marker-less motion capture approaches as an alternative to maker-based systems, validate the its accuracy in comparison to the gold standard, and implement the software outside of the lab in a pilot study.

A Comparison of Augmented Reality, Virtual Reality, and 3D Modeling in Nursing Education

Joseph Duszak

Faculty Mentors: John Drazan, Xiaoli Yang

Booth: 142

Abstract:

This project aims to look at a comparison between current Augmented, Virtual, and 3D modeling systems and how they are currently used in the context of nursing education. Currently, nursing education is moving past the use of cadavers for anatomy and physiology courses due to cost and ethical concerns. The use of simulation software as a replacement allows for students to have a more in-depth view of the human body without the concerns raised by the use of cadavers. These systems also allow for increased accessibility in the examination of the body, allowing for multiple students to interact with the system at once, and allowing for students to have a deeper view of the human body outside of a normal lab setting.

Developing an Iso-Damping Dynamometer to accurately measure muscular function

Thomas Pris, Adam Krzywosz, Alexander White

Faculty Mentor: John Drazan

Booth: 143

This research was supported by the Hardiman Scholars

Abstract:

Isokinetic dynamometers are considered the gold standard in measuring muscular function. However, they can cost upwards of $50,000, are immobile, and use more than 15 square feet of space. This project concerns the creation of a novel "iso-damping dynamometer" (IDD) to accurately measure muscular function within the accuracy of an isokinetic dynamometer. We designed out IDD to meet the following criteria: 1) composed of commercially available components, 2) be mobile outside of a lab environment, 3) measure muscular function within the accuracy of commercial devices. The iso-damping dynamometer passively controls movement with a linear damper for the safety and operability of the user and uses an Arduino for data retrieval and processing. One main goal for the iso-damping dynamometer is to connect with other devices inside and outside of lab environments to provide a greater range of data for any given user. Our device will allow for the collection of high quality data outside of the biomechanics lab.

Mobile Sports Science Lab

Conor Landry, Eric Hawkinson, Alexander Hemmat, Omar Jack

Faculty Mentor: John Drazan

Booth: 144

Track: Community-Engaged Learning and Interdisciplinary Studies

This research was also presented at *Orthopedic Research Society Annual Meeting and New England Biomedical Engineering Conference*

This research was supported by the Hardiman Scholars

Abstract:

Our project is focused on designing a new approach to engage underrepresented youth by implementing STEM ideas and designs with sports science applications. With our sponsor 4th Family, we have designed a STEM engagement platform to build on middle school and teenage youth interest in sports as a venue for STEM engagement. Youth participation in STEM activities during their free time encourages and inspires the next generation to pursue careers in the fields of science, technology, engineering and math (STEM). One limitation of existing programs, such as robotics clubs, is that they preferentially engage youth who are already interested in STEM. Therefore, the students most in need of an introduction to STEM, those without a pre-existing interest, are not engaged by these existing programs. This project aims to broaden engagement in STEM learning for new populations of youth. We have developed a suite of low-cost 3D printed, arduino based devices modeled after the NBA rookie combine which we brought to 5 different events in across the country to engage over 500 youth in STEM through sports.

Specification Development for Scalable Manufacturing

Anastasia Mello, Brian Salvador, Brittany Tucker, Anthony Guerrera

Faculty Mentor: John Drazan

Booth: 145

This research was supported by the Hardiman Scholars

Abstract:

The purpose of this project is to apply the engineering design process to develop manufacturing specifications for a local, rapidly expanding business. This will consist of utilizing various methods of data collection that our team has learned as mechanical engineers to achieve the ultimate goal of making the product, Hunnyball, less expensive while maintaining the quality of gameplay and remaining within the cost constraints provided by the company. The company is seeking to identify different candidate materials to create the next generation of boards for broader audiences. Several types of materials will be selected in order to test different material properties, comparing and classifying how each affects gameplay and portability. A preliminary qualitative test was performed, and it was observed that the vibrations appeared to be more present in the lighter boards compared to that of the beta prototype, specifically in the wings. Therefore, to quantify the movement of the wings, a wing deflection tool was designed to attach to the bottom of the board. This allowed us to measure the total deflection of the wings and determine if there was a correlation between board material and wing movement. In order to accurately characterize the output of the board, the input must be consistent. Therefore, it was imperative that a means of ball delivery be developed to achieve a consistent velocity while also targeting specific locations of the Hunnyball board. A preliminary speed test was performed using average Hunnyball players to create a range of velocities that the ball would be thrown during gameplay. A test plan was then developed to characterize several ball delivery systems in terms of their ability to hit a specific target, as well as achieve the desired velocity gathered through the preliminary speed test. As no existing ball launching mechanism could sufficiently satisfy both parameters, it was determined that a ball launching system must be designed specifically for Hunnyball testing. Several designs were proposed and modified in order to create the final ball launcher. Using this mechanism, energy loss testing was performed. Slow motion analysis of the ball being launched at the centerboard was recorded, and energy loss was calculated using the initial and exit velocities. From this data, we could quantitatively compare the impact that the new board materials had on gameplay compared to the original Baltic Birch wood. These several modes of testing allowed us to determine which of the new materials is the best candidate to be a replacement for the original Baltic Birch board.

Instrumenting Nordic Walking Poles for Quantitative Gait Assessment

Julia Kilroy, Dominic Oliveri, Conor Landry, John Minogue

Faculty Mentor: John Drazan

Booth: 146

This research was also presented at *Northeast Bioengineering Conference (NEBEC)*

This research was supported by the Hardiman Scholars

Abstract:

Assistive walking devices, such as canes, crutches, or Nordic walking poles (NWP) are commonly used by post-surgical patients, the elderly, and individuals with ambulatory difficulties. Fundamentally, these devices redistribute load from the lower body to shield healing tissues during recovery or to compensate for reduced function. These devices have the potential to provide individualized data for user mobility and health by monitoring loading patterns through the device. Unfortunately, there are few commercially available instrumented devices and those that are available are cost-prohibitive. To address this issue, we have developed an instrumented NWP. Our design requirements include that it: 1) Requires minimal alterations to an existing device, 2) serves as a research tool in both the laboratory and real-world settings, and 3) is low-cost and easy to manufacture.

Automated Polymer Tube Cutter

Joseph Liucci, Giovana Nazeozeno, Brody Biebel, Michael Berardini

Faculty Mentor: Michael Zabinski

Booth: 147

Track: Interdisciplinary Studies

Abstract:

Our team designed an automated system with the intent to cut five-foot long polymer tubes into 1 ⅝ inch pieces. The machine consists of three subsystems: a singulator system, a dual roller system, and a cutter system. In the current process, the tubes are cut pneumatically by the operator repeatedly with the press of a button. Our automated system requires an operator to load 50 tubes into the designated V-block once a day. This is the only task the operator performs. The singulator picks up one tube at a time using a grooved attachment that is mounted onto the vertical motor. This attachment travels up to the home sensor position located at the top of the singulator. The polymer tube then goes through a series of roller systems and subsequently reaches the cutter. Next, the tube is guided by the second roller a calculated distance and 1 ⅝ inch cuts are made. A calibrated sensor sends a signal to the cutter for each cut to be made. The cut pieces are then collected in a bin. Once the 50 tubes have been cut, the operator reloads the system. The automation of this system significantly increases operator productivity.

Building A Data Warehouse Based on Workflow Automation and 3rd Party Services

RamKumarReddy Tamanampudi, Charlotte Ntim, Prince Addo

Faculty Mentor: Mirco Speretta

Booth: 148

Abstract:

The Diocese of Bridgeport collects data on the operations of all its parishes. This includes financial data, attendances, activities at the different parishes, and historical data. There are several datasets that need to be periodically collected. Some are available through third-party services and housed on different platforms. All these differences make it difficult to extract, process, and create custom reports of the data. The goal of this project is twofold: developing an application that collects and maintains all the information in a data warehouse and providing a user interface to easily generate reports and visualizations.

We plan to develop the application in Appian®, the software platform already adopted by the Diocese. We intend to collect the data using various methods: REST-based APIs, Web forms, and uploads. Tableau dashboards are also designed and created to show the visualization of the data retrieved from Appian®

A Literature Review of Honeypots and Intrusion Detection Systems

Chao Tan, Julian Toro

Faculty Mentors: Mirco Speretta, Joseph Wilson

Booth: 149

Abstract:

An Intrusion Detection System (i.e., IDS) is a device or software application that monitors network transmissions and triggers alerts when suspicious activities are detected. In the context of cybersecurity, a honeypot includes various software tools whose goal is to lure attackers into empty systems. There are various techniques that are used to create honeypots (e.g. hosts, network services, or data). Researchers have been using honeypots to capture and analyze the behavior of attackers and understand their methodologies, intents, and motivations. This information is typically used to enhance the security of the existing software of an organization. In this project, we have looked at seven papers (in a span of years between 2003 and 2018) that show how honeypots are used as IDS. We also set up and ran a honeypot in our cybersecurity lab.

Hate Speech Detection and Handling in Online Chatting Spaces

Nicolas Slenko, Nikita Safronov, Jonathan Chacko

Faculty Mentor: Mirco Speretta

Booth: 150

Abstract:

Hate speech represents abusive or threatening expressions that are based on prejudice. The proliferation of hate speech in online chat spaces, often in the form of images and videos, presents a formidable challenge to social harmony. Despite efforts to eliminate hate speech, current messaging applications are often limited in their ability to effectively identify and censor it. Discord is a free communication platform that lets you share voice, video, and texts with friends, game communities and developers. It has over 300 million registered users. They can join groups, called servers. In these servers, users can message and call one another. These are the virtual spaces that are often abused with hate speech. The Discord platform was chosen for this study as it allows for users to easily implement code within their own servers. The goal of this study is to develop DUE (e.g. Discord User Enhancement), a server side application that allows the users of a Discord server to detect and censor hate speech expressions. The application also gathers data that we analyze to validate the effectiveness of our approach and gain insight into the most prevalent forms of hate speech. All the data collected is not linked to individual images or videos, nor traced back to the originating user.

Predictive Maintenance Through Visualizations of Data from IoT Monitoring Systems

David Johns, Kh Hosain, Karan Jain

Faculty Mentor: Mirco Speretta

Booth: 151

Track: Community-Engaged Learning and Writing Across the Curriculum / Within the Discipline

Abstract:

OKAY Industries Inc. is an organization that engineers and manufactures components and subassemblies for OEM devices in the medical, surgical, precision, and other specialty markets. OKAY uses a Manufacturing Execution System (i.e. MES) called PLEX, a software platform that manages and controls the production process in their manufacturing facility. It stores information and provides visibility into all aspects of the production process, including raw materials, work-in-progress, and finished products. This project focuses on predictive maintenance: improving the efficiency of the manufacturing processes by creating visual dashboards based on data collected from the IoT (i.e. the Internet of Things) devices, which are directly connected to the machines and send data to PLEX. Through FUUZ, a Web-based platform available at OKAY, you can create and display visualizations of data. FUUZ is tightly connected to PLEX, allowing the retrieval of data collected from the manufacturing machines. The data is used to create new schemas of data that are used to feed various visualizations organized into dashboards. Each of them includes charts providing real-time insights related to the manufacturing process. The dashboards are available to employees at OKAY, with the goal of supporting them in making informed decisions about the efficiency of production. This is a pilot project involving 3 manufacturing machines on the floor. OKAY is planning to extend this approach to 17 more machines by the end of the year.

Nmap Data Parsing for a New Data Visualization System

Julian Toro

Faculty Mentor: Mirco Speretta

Booth: 152

Abstract:

When it comes to securing a network, vulnerability scans are key. These scans will show where the vulnerabilities are located as well as the severity of the issue. Understanding this data is necessary in resolving the vulnerability, but it is not an easy task to carry out. Since a visual representation of that data is an approach that is already used in commercial products, we would like to enhance the existing process. In this context, our project focuses specifically on the data formatting step. We took the output files produced by Nmap and converted them into JSON format. The structure of the resulting data can be automatically processed by various visualization tools (e.g. Tableau®) to create reports and visualizations that can be used by both managers and cybersecurity professionals to map and accurately resolve the issues within their organization. We discuss how this system will work as well as a potential way to automate the process for user ease.

A Three-Dimensional Bioprinted and Electrospun Dual-Scale Scaffold for Cardiac Tissue Manufacturing

Evan Fair, Ryan Jaworski, Elizabeth Ricci, Eliza Hogan

Faculty Mentor: Naser Haghbin

Booth: 153

This research was also presented at *2023 Materials Research Society Spring Meeting*

This research was supported by the Hardiman Scholars

Abstract:

On average, twenty-two people pass away daily while waiting for a vital organ donation. Biomanufacturing artificial organs can address the organ scarcity crisis and save lives. This study investigates muscle tissue engineering by combining 3D bioprinting and electrospinning methods to create a dual-scale scaffold. The dual-scale scaffold contains 3D bio-printed microstructure layers and an integrated polycaprolactone (PCL) electrospun nanofiber matrix. The most significant limitation of using 3D-printed scaffolds relates to the ineffectiveness of cellular elongation resulting in resistance to the adsorption of muscle bundles. Synthetic nanofibers used in this study have the potential to influence the alignment of the cells, which improves the effectiveness of holistic muscle functioning through cooperative contraction and relaxation of the muscle cells. The 3D bio-printed microstructures serve as a gap collector and a flexible structure to allow extension and contraction of the cellular structure. Electrospun nanofibers form mesh networks within the 3D-printed scaffold's pores. The three-dimensional dual scaffold will be manufactured, characterized, sterilized, and then used as a scaffold for muscle cell culturing. The attachment, growth, viability, proliferation, and alignment of muscle cells are examined using microscopy and other standard cell culturing techniques.

3D Bioprinting of a Human Blood Vessel Using Collagen Bioink for the Viability of Cardiomyocyte

Eliza Hogan, Elia Haghbin, Alana Hayes, Grace Lombardi, Elizabeth Ricci

Faculty Mentor: Naser Haghbin

Booth: 154

Track: Interdisciplinary Studies

This research was also presented at *2023 Materials Research Society Spring Meeting and NASA Connecticut Space Grant Consortium*

This research was supported by the Hardiman Scholars and the NASA Connecticut Space Grant

Abstract:

Traditional vein grafts are complicated surgery where doctors must deeply cut a patient's legs and neck to harvest a vein, putting patients at risk of traumatic surgery. Therefore, creating a personalized vein using their body cells is essential. Collagen is the main structural element of the extracellular matrix found in the vessel wall. Collagen provides a support structure with a tensile strength that controls the cell growth direction as cells adhere and elongate. This research created a simulated blood vein using collagen bioink as a scaffold for cell growth. C Our preliminary study showed collagen bioink did not lose structural integrity when submerged in DMEM (Dulbecco's Modified Eagle's Medium) cell media. In this research, the H9c2 embryonic rat cardiomyocyte cell line was cultured and mixed with collagen bioink and printed in a tube-like arrangement to simulate the geometry of an actual blood vessel. The cell viability in Collagen was examined. It was found that the collagen scaffold maintained its structural integrity and provided enough flexibility during tissue culturing.

Automated System for Deburring Plasma Spray Coating on an Aerospace Transmission Shaft

Liam Grealy, Maksymilian Puk, Eric Degregorio, Jeffrey Wilt

Faculty Mentors: Naser Haghbin, Shahrokh Etemad

Booth: 155

Track: Community-Engaged Learning

This research was supported by the Hardiman Scholars

Abstract:

The present system automates the deburring process of an aerospace transmission shaft. Currently, the manufacturing process is time-consuming due to the custom part having several holes that need to be deburred after plasma spray coating. Our system consists of a rotary actuator which will be able to rotate the part by indexing from hole to hole. We also have a linear actuator that brings our drill to the face of the part. The actuators are controlled through a human-machine interface (HMI) connected to a Programmable Logic Controller (PLC). Utilizing an automated system for deburring plasma coating on these holes will improve efficiency by speeding up the deburring process as well as providing accuracy and operator safety.

Automated Protein Blotting Processor

Alex Walker, Daniel Fajardo

Faculty Mentors: Naser Haghbin, Uma Balaji

Booth: 156

This research was also presented at *American Society for Engineering Education Zone 1 Conference*

Abstract:

Western blotting is a process used to identify a single protein within a complex biological sample. Automating one or more steps in this process can increase reproducibility and throughput. Researchers use automated blotting equipment to reduce contamination risk and increase outcome accuracy. The goal of our project is to create a machine that is inexpensive, portable, modular, and fully automate the immunoblotting process from start to finish. Our machine will have three main steps to complete. These are the dispensing of antibody solution and washing fluids from a syringe pump, the shaking of the tray to completely cover all parts of the sample as well as separating the proteins, and the opening of a solenoid valve to drain both fluids. Competing products are expensive, so our machine will be affordable and available for university labs and small biotech companies. To build the system 3D-printed parts as well as an automated mechanism required to pump the liquids are used. An Arduino microcontroller is used to control two syringe pumps, one for the required antibodies, and the other for the washing process. The Arduino microcontroller controls the shaking mechanism as well as the time duration of the shaking in order to effectively complete the blotting process. The researcher will be able to enter the volume of liquids that is to be dispensed from the syringe pump in the blotting process through a computer or an app on a mobile device. This information is then wirelessly transmitted to the automated blotting system. The designed system will completely automate the immunoblotting steps, while the additional steps of electrophoresis and electro blotting are further required to be performed by hand by the researcher. A functioning protein blotter prototype capable of operating autonomously, all at a fraction of the cost of competing products is made available for university labs through this project.

Developing a SOE Industrial Automation Laboratory

Timothy Holewienko, Maksymilian Puk

Faculty Mentor: Naser Haghbin

Booth: 157

Abstract:

In undergraduate and graduate institutions, students involved in science, technology, engineering, and mathematics (STEM) tend to lack hands-on experience. Particularly speaking, Fairfield university engineering students often develop a strong understanding for theoretical concepts while lacking the ability to apply their understanding. The goal of this research is to develop an industrial automation laboratory that bridges this gap between theory and hands-on learning. In order to complete this task, pneumatic, electronic, mechatronic and PLC equipment was used to create a laboratory environment that simulates the experiences a student may encounter in their future job as an engineer. To begin the lab, extensive research was conducted on the type of equipment and software that would be needed to create proper experiments for students. A planning and purchasing phase followed, allowing for the acquisition of lab equipment and software licenses, the creation of weekly meetings, and the creation of a class syllabus. At the conclusion of the research program, sixteen laboratory experiments had been assembled, tested, and documented in a lab manual. Each experiment consisted of a background on the topic, a procedure with an in-depth explanation on how to run the experiment, and review questions that test a student's understanding.

Accurate Lock & Hardware Acid Recirculation System

Luke Borgos, Olivia Homan, Dylan Richardson, Christopher Rodriguez

Faculty Mentor: Shahrokh Etemad

Booth: 158

Abstract:

Accurate Lock and Hardware uses a mild acid in the finishing process of many of their products. Placing the products in an acid bath causes an oxidation reaction to occur, darkening the outside color of the products. Currently, shallow plastic bins filled with acid are used for the process. Parts are individually placed in and removed from the acid by hand. These bins need to be manually emptied three times a day so that the buildup of metallic powder does not negatively affect the finish of other parts. Given unoxidized parts and Mi-Tique 1791 acid, we will design and build a prototype system to color the parts consistently subject to the constraints that a constant pH and temperature are maintained and as few electronic components as possible are used. A custom system will be developed to drain the acid, filter out the suspended metal particles, and pump the acid back into the system. This acid recirculation system will reduce the amount of waste acid and improve the efficiency of the finishing process. The guidelines of OSHA and the EPA will be followed to ensure the system is safer and more environmentally friendly than the current process.

Composite Triply Periodic Minimal Surfaces (TPMS) Structures for Automotive Applications

Shaun Ormiston

Faculty Mentor: Sriharsha Sundarram

Booth: 159

This research was also presented at *Materials Research Society Meeting Fall 2023*

Abstract:

Triply periodic minimal surfaces (TPMS) are surfaces that have minimal area between a given boundary and replicate along three dimensions. Research has indicated that TPMS lattices, specifically the Gyroid structure, possess exceptional mechanical and energy absorption properties. To fabricate these complex structures, 3D printing is the preferred approach. However, most existing TPMS structures are printed from a single polymer. The purpose of this study is to create a composite TPMS structure using 3D printing and assess its mechanical and energy absorption properties. TPMS lattice structures were designed using the open-source program MSLattice. The lattice was modeled into cubical, cylindrical, bar, and dogbone structures with porosity levels of 25%, 50%, and 75% using SolidWorks. The structures were 3D printed on a MarkForged Onyx Pro printer using Onyx filament (nylon with chopped carbon) as the base layer and glass fiber to act as the reinforcement. Compression tests (ASTM D695) were performed on the cubical and cylindrical samples. 3 point bending tests (ASTM D790) were performed on the bar samples, and dogbone samples were subjected to tensile tests (ASTM D638). The results showed that the addition of glass fiber nearly doubled the maximum stress that the structures could withstand. For all samples, the 25% density glass reinforced structures exhibited similar strength as the 75% density structures without reinforcement, demonstrating the benefits of adding glass fiber. Furthermore, the energy absorption capacity at 50% deformation for the 25% density cylindrical samples increased from 6.3 to 7.9 MJ/m3 with the addition of glass fiber. These lightweight composite TPMS structures with enhanced mechanical properties have potential applications in the automotive industry, specifically for crumple zones.

Microbioreactor Array for Bio-Artificial Organ Development

Maciej Lewicki, Hannah White, Fridaus Kareem, Vishvesh Patel

Faculty Mentor: Sriharsha Sundarram

Booth: 160

This research was also presented at *American Society of Mechanical Engineers International Mechanical Engineering Congress and Exposition*

This research was supported by the Corrigan Scholars Fund and the Hardiman Scholars

Abstract:

The goal of our project is to create a microbioreactor array and scaffold system to conduct holistic drug testing on organs. The first step is the design and fabrication of three dimensional tissue scaffolds through SolidWorks. Polylactic acid (PLA) was chosen for this study as it is a biocompatible thermoplastic and is cost effective. The scaffolds are printed with PLA pellets using the Cellink BioX printer equipped with a thermoplastic print head at a temperature of 175 degrees C and pressure of 350 kPa. Oleuropein is used as the disinfectant for the scaffold, as prior results have shown its effectiveness at attacking aggressive cancer cells. A second pneumatic print head will deposit oleuropein on the scaffold. The drug-loaded scaffold is subjected to solid-state foaming to increase the surface roughness of the scaffold. The scaffolds are injected with 8 MPa carbon dioxide for 3 hours under ambient conditions and foamed in hot water at 90 degrees C for 20 seconds. A microbioreactor array with the capability to accommodate multiple scaffolds is designed in SolidWorks and optimized using Ansys Fluent. A simple pump will be used to circulate the fluid into the array and then using the design of the reactors, the motor will turn a switch which controls whether or not the fluid enters the reactor and interacts with the cells. Subsequently, cell culture is performed to understand the effect of the drug.

Bio-Smart Baby Sock

Robert Dillon

Faculty Mentor: Susan Freudzon

Booth: 161

Abstract:

The idea behind the biometric baby sock is to collect a greater array of data from an infant to ensure their health and safety. The proposed device is an advancement upon what competing products have already been developed to allow for collection of more data. This device is designed to accurately monitor and collect an infant's temperature, blood oxygen level, and heart rate. Through the implementation of these sensors in a singular device, this allows for caregivers to easily track and monitor this data. This device will be 3D printed using a flexible material using a design created in Solidworks, which allows for the given sensors to fit in securely. Along with the development of a design in Solidworks, a "Drop Simulation" will also be completed to determine the structural integrity of the device.

Blood Sampling Device

Brigid Protzmann

Faculty Mentor: Susan Freudzon

Booth: 162

Abstract:

Blood testing is used for diagnosis, monitoring, and other medical needs. Diseases such as diabetes, tuberculous, and typhoid fever are all diagnosed using blood tests. Iron deficiency, low blood sugar, and scurvy are all deficiencies that also need to be diagnosed via a blood test. Many disorders can be diagnosed based on protein deficiencies found using blood tests. Most people will require a blood test at some point throughout their life. The labs utilize machines that can distinguish types of blood cells, cell counts, and levels of proteins within those cells. In order to reduce patient discomfort, anxiety, and refusal of testing, the goal of this project is to design an alternative option for drawing blood. This new blood sampling device contains an array of microneedles that is less painful than traditional intravenous blood draw.

Ergonomic Design of the Enteral Syringe to Improve Patient Quality of Life

Stephanie Rodgers

Faculty Mentor: Susan Freudzon

Booth: 163

This research was also presented at *Biomedical Engineering Society (BMES) Conference, Fall 2022*

This research was supported by the Hardiman Scholars

Abstract:

Almost half of one million people in the US alone have feeding tubes to sustain proper nutrition. This population spans all ages, genders, and can be attributed to a wide range of illnesses from cancer to neurological disorders, as well as stroke, premature birth, or trauma. The majority of those with feeding tubes choose to feed themselves using enteral syringes. Current enteral syringes operate with the user applying force to suction liquid nutritional supplement into the syringe and apply force to compress the syringe to administer feed. While current enteral syringes are marketed as reusable, they cannot withstand the amount of use required of bolus feeders, acquiring more friction, and becoming difficult to operate. The goal of this project is to create an easy-to-use redesign of the enteral syringe. The newly designed enteral syringe is similar to a chemistry pipette, with a wheel that is rotated to raise and lower the plunger. An initial prototype was 3D printed using PLA. Ergonomic testing was performed using a BIOPAC data acquisition system to record electromyography (EMG) signals from the forearm flexor and extensor muscles.

Smart CPR Trainer

Stephanie Rodgers, Cassi Ronan, Brigid Protzmann, Robert Dillon

Faculty Mentor: Susan Freudzon

Booth: 164

This research was also presented at *Northeast Bioengineering Conference*

This research was supported by the Hardiman Scholars

Abstract:

"The Smart CPR Trainer is a device that will assess and provide feedback to users performing cardiopulmonary resuscitation (CPR). CPR is a technique that, when performed properly, can be lifesaving. The Smart CPR Trainer will ensure that the necessary metrics for performing cardiopulmonary resuscitation are met. Critical components to proper CPR performance include chest compression rate, depth of compressions, and recoil of the chest. For CPR training and certification, mannequins are used to perform chest compressions. A certified instructor will assess the quality of the performance, but without quantitative feedback of the metrics being met. Therefore, the Smart CPR Trainer will provide visual and analyzed feedback to the user on the depth and frequency of chest compressions performed in a cost-effective manner. The Smart CPR Trainer is a device which can be used with a commercially available CPR mannequin. This device uses ultrasound sensors connected to an Arduino microcontroller that measure the depth and frequency of compressions, while also interfacing to a MATLAB app that displays informative feedback on CPR performance to the user. To test the performance of the device in CPR testing, we plan to run usability tests as well as calibration tests at Fairfield University."

Laparoscopic Surgery Training Dome

Brianna Duswalt, Kristen Alexander, Natalie Crawford

Faculty Mentor: Susan Freudzon

Booth: 165

This research was also presented at *Northeast Bioengineering Conference*

This research was supported by the Hardiman Scholars and the CT Next Grant

Abstract:

Surgeons undergo extensive training utilizing laparoscopic surgery tools before performing these procedures. The training involves first observing procedures, next assisting with cases, then practicing in dry and wet labs to practice basic laparoscopic surgery skills, and finally operating under the supervision of others before operating independently. The focus of this project is on the training for laparoscopic surgery. Frequently, training programs utilize a training simulator where users can practice activities such as suturing and other fine motor skills. The current training simulators do not provide quantitative feedback on how well skills were performed. Overseeing surgeons must visually confirm that the procedure was completed successfully. In this project, we use Arduino, an open source electronics platform, and Matlab software to quantify and display the forces and tensions that occur when a laparoscopic surgery and general suture training is performed. This feedback includes visual mapping of forces as well as warning lights that will alert the user to when too much force is applied. This quantitative feedback will serve to improve the quality of laparoscopic surgery and suturing. Improving surgical training technology may lead to better outcomes for patients.

IMAGE RECOGNITION FOR DISTRIBUTED TRANSFORMERS & COMPONENTS

Hammad Mansoor

Faculty Mentor: Xiaoli Yang

Booth: 166

Abstract:

Grid transformers are essential for the distribution of energy over large distances. Therefore ensuring that they are well maintained is imperative. We propose an Augmented Reality based application that identifies components of any transformer and displays various diagnostic information that would support maintenance activities.We will use a combination of two deep learning models, YOLOv7 and Masked AutoEncoders (MAE), in order to perform object detection of transformer components. The MAE architecture masks part of the input image and feeds it through an encoder-decoder loop. The output is a reconstruction of the original image. Training the model improves its ability to generalize features which can then be fed into the YOLOv7 algorithm to support object detection. This proposed architecture will support detection of components in a transformer which can help engineers better analyze issues without the need to read through a complex manual.

AR Based Electrical circuits engineering tutorials

Morgan Rogers, Ethan Hibbard, Tyler Pumper, Riley Fitzsimmons

Faculty Mentor: Xiaoli Yang

Booth: 167

Abstract:

The system is going to be utilizing an object detection algorithm, YOLO7, in order to recognize engineering lab equipment through the camera of an android device. YOLO7 is a CNN, convolutional neural network, which utilizes computer vision in order to detect objects in real time. The YOLO7 algorithm will be modified based on the accuracy percentage for our datasets. The system will utilize a trained version of YOLO7 based on a dataset compiled of labeled images of equipment that can be found in the electrical and mechanical engineering labs. The system will access the camera of an android device and will be able to identify equipment in real time if the user is directing the camera at a piece of equipment that has a tutorial available for it. Once the piece of equipment is recognized the system will then allow users to open an interactive lab in order to increase the engagement in learning the individual pieces of equipment. A recognized piece of equipment's interactive lab will be split into different activities or objectives for a user to complete. In order to allow the best learning experience for users, the lab will allow for a non-linear approach from the user. This means that the user is not forced to complete lab 1a if they already feel that they are confident in it and may repeat different sections of the lab if they feel they need more practice or experience. Furthermore, professors and companies in industry would be able to design tutorials in order to create the best experience for those they are trying to teach.

Re-engineering Robotic Arm for Wheelchair

Gabriel Grant

Faculty Mentor: Uma Balaji

Booth: 168

Abstract:

Current advances in the development of medical prosthetics for the physically impaired are insufficient in addressing the needs of wheelchair users who have inherently restricted mobility. The “Robotic Arm for Wheelchair Users” which was constructed by Phuc Nguyen, Ohsafa Harding, Giles Ruck, Alan Kristie in spring 2020 to address the mobility loss by assisting with everyday tasks such as opening doors, picking up and holding small objects such as coffee mugs, water bottles, books, etc. is re-engineered in this work. The intent of this device was to create a low-cost, widely applicable, solution with a similar motion to a human arm and perform naturally so it is user friendly. This goal was accomplished using 3D printing, 5 degrees of freedom. However, the user interface developed by the team was incompatible. This work accomplished and improved the user interface, paired by Bluetooth to a more economical modern microcontroller, the ESP32. The robotic arm interprets the data input from the user interface (PS3 gamepad) and translates it into a usable output to drive the system. Using this approach, we have been able to achieve all planned goals in a low-cost open-source prototype.

SuSTEMability: SUSTAINABILITY FOCUSED STEM ACTIVITIES

Rishi Black, Margaret Millar, Lorenzo Arabia, Stephen Borrelli, Noah Duncan, William McLaughlin, Brianna Duswalt, Isabella Carrano, Kobi Okpoti

Faculty Mentors: Uma Balaji, Susan Freudzon

Booth: 169

Track: Environment and Sustainability

This research was supported by the Constellation E2 Energy to Educate Grant Program

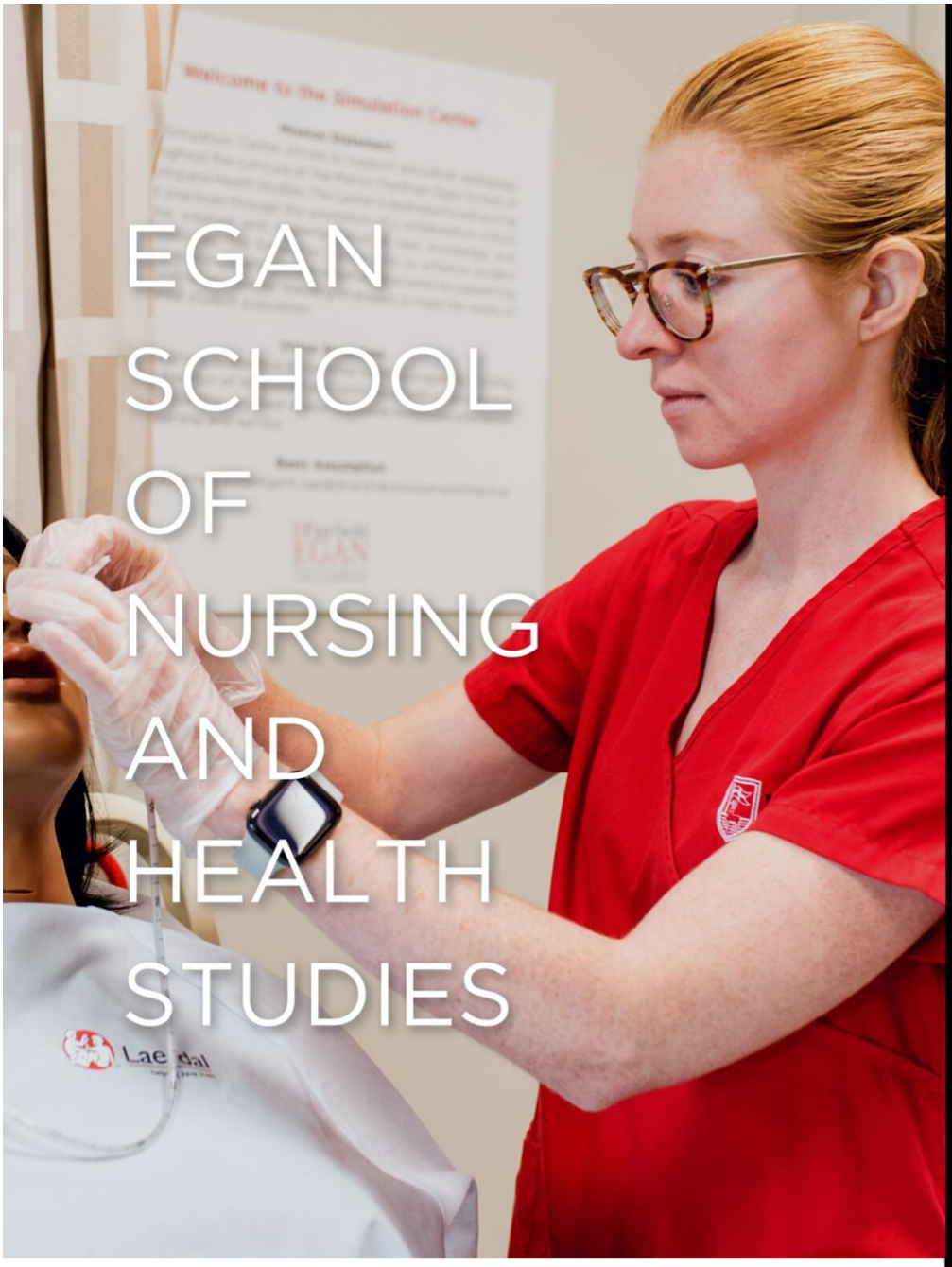
Abstract:

The SuSTEMability project addressed fundamental challenges to a sustainable energy future by highlighting the importance of renewable sources, responsible energy usage and environmental safety. Supported by E2 Energy to Educate, Constellation grant, undergraduate SuSTEMability Fellows worked together to create an engaging, accessible curriculum for attracting underrepresented students to STEM through age appropriate activities. Various hands-on activities that focused on sustainable energy sources and environmentally safe practices related to engineering was presented to elementary and middle school children in the local community. In the second and current iteration of the project, there were three sets of visits during February and March 2023. First, the Fellows and their faculty mentors visited Cesar Batalla, a Bridgeport public school that serves over 1000 students in grades PreK-8 and mentored 7th and 8th grade students in their class-room. Second, the Fellows conducted STEM activities with youth in the after school program at the Wakeman Boys and Girls Club, located at Bridgeport, Connecticut. Third, Davenport Ridge Elementary School students visited the Fairfield University Innovation Annex twice, where STEM activities and a Laboratory tour was carried out by SuSTEMability Fellows. Overall, the study found that elementary and middle school students learned from engaging hands-on sustainability focused STEM activities. They understood the science of renewable energy, the value of adopting good practices for creating a safe and sustainable future for all. SuSTEMability fellows gained leadership and communication skills through mentoring.

Session Two

EGAN SCHOOL OF NURSING & HEALTH STUDIES

- Graduate Research
- Public Health Capstones
- Senior Capstone Projects
- Social Work Capstone



EGAN SCHOOL OF NURSING AND HEALTH STUDIES

Fairfield EGAN

INNOVATIVE RESEARCH SYMPOSIUM

Parallel Processes in Perinatal Providers and their Patients impacted by Institutional Racism and Systemic Silencing

Elise Palumbo

Faculty Mentors: Tanika Eaves, Jennifer Dealy

Booth: 1

Abstract:

Perinatal health disparities are a pervasive issue in the United States as BIPOC birthing complications and maternal- infant mortality remain significant. The present study examined perinatal health providers' perspectives on serving BIPOC patients and then identified common themes among the experiences to illuminate the patient experience. The findings indicate that institutional racism and systemic silencing are two key themes that are consistent within both patient and provider experiences. The results appear to demonstrate that perinatal providers and BIPOC patients undergo a parallel process of being devalued, marginalized, and silenced within the healthcare system. The results also highlight the need for further research to determine how to enhance support for perinatal healthcare providers in the workplace to ultimately best serve BIPOC patients.

What's on your plate? Endocrine-Disrupting Food Alternatives and Perceptions of Food Safety

Abigail Pike

Faculty Mentor: Jennifer Schindler-Ruwisch

Booth: 2

This research was also presented at *American Society For Nutrition*

This research was supported by the McGuinness Mentorship Program

Abstract:

Endocrine disruptors in consumable food products, can have short and long-term adverse impacts on health including disruptions to male and female reproductive systems. Specifically, BHA (butylated hydroxyanisole) and BHT (butylated hydroxytoluene) are commonly found in processed food products such as cereals, granola bars, processed meats.In the US, as compared to other international contexts, very limited food product regulation related to endocrine-disrupting compounds exist.Consumer awareness of food product safety is limited and little research has documented consumer awareness specifically related to endocrine-disrupting products, potential alternatives, and health impacts.Comparable products are available for most food categories that offer healthier alternatives.The purpose of this study is to further investigate perceptions related to food choice options that could have endocrine-disrupting implications.

Visual Mapping of Community Health: Caroline House & PhotoVoice

Kaila Pryor

Faculty Mentor: Jennifer Schindler-Ruwisch

Booth: 3

This research was supported by the Lawrence Family Fund

Abstract:

Aim: In this study, we asked members of the English learning center, Caroline House, in Bridgeport Connecticut to submit photographic data answering the question, “How does your community affect your health?” Our hope was to examine the social determinants of health in the Bridgeport and surrounding areas. Methodology: Photovoice is a valid qualitative methodology that can help demonstrate barriers and facilitators of health by acknowledging and addressing challenges of the built environment. 23 women submitted around 35 photographs showing how their community affects their heath. We used an inductive qualitative thematic analysis to code the photographs submitted.Results: Most of the photographs submitted and evaluated were under the theme of trash, hygiene, and sanitation, highlighting this as a prevalent issue in the Bridgeport community. Key themes and photographic evidence were displayed and discussed in a community meeting to determine next steps. Conclusion: After holding a community dialogue participants shared concern about littering, air pollution from smoke, and neighborhood cleanliness. Together the group came up with a preliminary plan of action which included calling legislators, advocating to the health department for enforcement of health policies and laws, drafting letters to city hall, and posting signage and social media content related to Earth day and community cleanliness. Future research: Two additional meetings are scheduled to continue using the community voice to direct related action on these findings.

Breakfast Consumption and Academic Performance among Fairfield University Undergraduate Students

Maria Boyle

Faculty Mentor: Kimberly Doughty

Booth: 4

Track: Community-Engaged Learning

Abstract:

Eating a healthy breakfast has been shown to improve student attention, cognition, and focus in school. Rates of absenteeism in students who consume breakfast regularly are also reduced. While there is ample data suggesting the benefits of breakfast consumption on academic performance in young students, literature is scarce on the academic impact of breakfast consumption in college-aged students. The purpose of this study was to assess the relationship between breakfast consumption (frequency and quality) and academic performance among Fairfield University undergraduate students. Study participants completed an online Qualtrics survey that measured self-reported frequency of breakfast consumption, frequency of consumption of seven different food categories at breakfast (whole grains, refined grains, dairy, protein, fruits, vegetables, and pastry), and current GPA.

Patient satisfaction and timely and effective care as predictors of hospital readmission

Giorgi Kuparadze

Faculty Mentor: Kimberly Doughty

Booth: 5

Abstract:

According to the latest data, the annual readmission cost to the United States healthcare is $26 billion. This secondary data analysis aimed to determine whether two factors that may indicate less timely and less effective care—patient satisfaction and the percentage of patients who left the emergency department without being seen—were associated with 30-day readmission rates. Patient satisfaction was measured by the patient survey from consumer assessment of healthcare providers and systems (HCAHPS), which was reported as a summary star rating. I used cross-sectional data from 4,848 hospitals in the United States participating in Medicare services. I calculated Spearman's rank correlation coefficients to assess the associations between HCAHPS summary star rating and percentage of patients who left without being seen (LWBS) with 30-day hospital-wide all-cause unplanned readmission (HWR). There was a trend toward a positive correlation between LWBSand HWR, $r (2365) = .04$, $p=0.051$. There was also a significant negative correlation between HCAHPS summary star rating and HWR, $r (2373) = -.27$, $p<0.001$)

Sleep Habits and Behavior among Children Ages 3 Through 7 Years

Kelsi McCarthy

Faculty Mentor: Kimberly Doughty

Booth: 6

Abstract:

Proper sleep health is crucial for adequate development through childhood. However, behavioral sleep problems are among the most common sleep problems in childhood. Insufficient or inadequate sleep related to poor sleep habits in childhood may impact the attention, emotions, and behavior of children. While numerous studies have been performed on behavioral function in adults, current literature proves the need for a better understanding of behavior in children, as it relates to sleep habits, specifically sleep restriction. The primary purpose of this research was to investigate the relationship between sleep habits and behavior, specifically negative affect and effortful control, among children ages 3 through 7 years. To assess this relationship, I administered an online Qualtrics survey to eligible parents or caregivers. The survey included questions adapted from both the Children's Sleep Habits Questionnaire and the Children's Behavior Questionnaire.

Associations between Race/Ethnicity and Sense of Belonging among Fairfield University Students

Lily Carnicelli

Faculty Mentor: Kimberly Doughty

Booth: 7

Abstract:

Previous research has demonstrated that students' sense of belonging at universities has been linked with fewer depressive symptoms and correlates with higher motivation and enjoyment of academics. Unfortunately, a national representative survey found consistent patterns that underrepresented minority students at 4-year colleges report lower belonging than their peers. However, research is limited at smaller, predominantly White institutions like Fairfield University. The purpose of this study was to determine whether sense of belonging varies by race/ethnicity among Fairfield University undergraduate students. Participants completed a questionnaire administered through Qualtrics XM which included the Revised Sense of Belonging Scale. This scale is comprised of four factors: perceived peer support, perceived classroom comfort, perceived isolation, and perceived faculty support. Respondents were also asked sociodemographic questions like gender, race, class year, if they are a full-time student, and living arrangements. I found that White students had significantly higher scores for perceived peer support and perceived class comfort, but lower perceived isolation compared to all other races. Faculty support did not significantly differ between groups. The findings of this study agree with previous research demonstrating a correlation between sense of belonging and race/ethnicity. Fairfield University and other predominantly White institutions should consider doing more to promote a sense of belonging on campus.

Impact of a Brief Educational Intervention on Nutrition Knowledge and Behaviors among Female Collegiate Athletes

Haley Updegraff

Faculty Mentor: Kimberly Doughty

Booth: 8

Abstract:

Over the past 5 decades, there has been a steady rise in the number of female athletes competing at the collegiate level. Many female athletes are at risk for The Female Athlete Triad (The Triad) or Relative Energy Deficiency in Sport (RED-S). The three components of The Triad include menstrual irregularity, low energy availability, low bone mineral density (BMD). RED-S is known as the energy deficit between total daily energy intake (cal/d) and total daily energy expenditure (cal/d). These conditions can lead to increased fatigue, nutrient deficiency, menstrual dysfunction, poor bone health, and impairments in metabolic rate. Without proper knowledge of adequate nutrition intake, athletes may be more likely to consume inadequate energy, which increases their risk of The Triad and RED-S. The purpose of this study was to determine the relationship between nutrition-related knowledge and behavior among female collegiate athletes and to assess the effects of an informational leaflet on knowledge and behavior. Participants were members of the Division I Fairfield University softball team who agreed to participate. Following a pre-test, I distributed a leaflet with relevant information regarding The Triad and RED-S and recommended nutritional intakes for female athletes. After a two-week period, participants completed a post-test. To determine the effectiveness of the intervention, I compared participants' nutrition knowledge and eating behaviors pre-and post-intervention.

Evaluation of the Relationship between Mental Health and Alcohol Consumption

Ava Tirri

Faculty Mentor: Kimberly Doughty

Booth: 9

Abstract:

Rates of mental disorders have been steadily increasing among U.S. college students. Previous research has shown that mental health disorders decrease levels of physical activity, increase hours of sleep, and lower GPA and academic drive. College students often lack sufficient social support, defined as family and friend interactions, which may worsen mental health and/or lead to using alcohol as a coping mechanism. Previous studies have demonstrated that college students with poorer mental health tend to consume more alcohol. However, most studies have not assessed students' reasons for drinking. The objective of this study was to determine whether Fairfield University students with diagnosed mental health disorders consume higher amounts of alcohol and the extent to which students use alcohol as a coping mechanism. Participants included 63 undergraduate students at Fairfield University who completed an online Qualtrics survey, which included questions about reasons for alcohol consumption, frequency of alcohol consumption, and amount of alcohol consumed. Survey questions were adapted from the National College Health Assessment Survey.

Physical Activity Levels and Perceived Energy Drink Education

Emma Gauthier

Faculty Mentor: Kimberly Doughty

Booth: 10

Abstract:

Energy drinks are a very popular form of caffeine supplementation among college-aged adults. These beverages may cause potentially harmful side effects from the amounts of caffeine, sugar, and other legal stimulants they may contain. The purpose of this study was to determine whether students who consume energy drinks for athletic performance purposes, students who participate in sports, and students who are more physically active are more likely to report higher levels of perceived education about energy drinks and to report using reliable sources of information about energy drinks. To evaluate these relationships, I administered an online survey to undergraduate students who reported their energy drink consumption and physical activity habits and analyzed the responses.

Impact of Coaching Behavior and Team Culture on Student-Athlete Psychological Well-being

Samantha Lindsay

Faculty Mentor: Kimberly Doughty

Booth: 11

Abstract:

College athletes are at high risk for mental illness due to many different factors that include, but are not limited to, the necessity to please family, friends, and coaches; high level of expectations on the field, court and in the classroom; time management; and history of mental illness. The environments that coaches create at practices or competitions can have an immense impact on the psychological well-being of their athletes as can team culture. Team culture is composed of the values, beliefs, and attitudes that make up a team. The purpose of this research study was to assess the impact of coaching attitudes and behaviors and team culture on student-athlete psychological well-being among Fairfield University Division 1 student-athletes. Participants completed a survey through Qualtrics XM that included a series of scales that assessed positive mental health, coaching behaviors, coaching attitudes, and team culture. The survey also included questions about race, ethnicity, gender, and sport team. The sample included 78 division 1 student-athletes belonging to nine athletics teams. No significant correlation was found between coaching behaviors/attitudes and student-athlete psychological well-being. However, there was a significant positive correlation between team culture and positive mental health of student-athletes. The results of this study suggest athletic departments should focus on creating a culture that is welcoming and comforting to all student-athletes.

E-Cigarette Use among College Students

Madison Edmonds

Faculty Mentors: Kimberly Doughty, Jennifer Schindler-Ruwisch

Booth: 12

Abstract:

Contrary to popular belief, tobacco use of any kind, including through an e-cigarettedevice is unsafe. In fact, in 2016, the Surgeon General officially declared e-cigarette use amongyoung adults in the US a major public health issue, as the number of 19-22-year-olds vapingnicotine doubled between 2017 and 2019. Nicotine can be extremely harmful in any form and can impact users' brain development and heart health, and young people are especially vulnerable. Research suggests that most young adults falsely believe that e-cigarettes are a "healthier option." College students have reported vaping because of social pressures, for the high, the flavor, curiosity, low perceived harm, or to relieve stress. The purpose of this project was to develop and evaluate an infographic about the risks of vaping for college students. I developed an infographic highlighting the various health effects of vaping and distributed it to Fairfield University undergraduate students along with a link to a Qualtrics survey which assessed students' perceptions of the infographic.

Fairfield University Students' Binge Drinking Habits in Relation to Their Breakfast Routine and Physical Activity Levels

Mateo Rufo

Faculty Mentor: Kimberly Doughty

Booth: 13

Abstract:

Binge drinking is dangerous both for those who engage in this behavior and for society. Representing a burden of over $180 billion for the US, binge drinking peaks between the ages of 18 and 23 years, the age range of most college students. Not exempt from this scourge, Fairfield University has experienced its fair share of mass events of binge drinking that posed additional strains on local police and medical services. At least one study has claimed to ascertain that breakfast consumption could have a protective effect on the incidence of binge drinking among college students, but little research has investigated this possibility further. Another generally positive health behavior, physical activity (PA), has been associated with increased binge drinking, especially when performed for the wrong reasons. This counter-intuitive association has also been found for participation in organized sports in either high school or college. The objectives of this study were to ascertain whether associations between binge drinking and habitual breakfast consumption, athlete status and PA levels exist for current Fairfield University students. An additional aim was to investigate the relationship between breakfast quality and binge drinking, which has not previously been explored.

Social media, Substance Use, and Disordered Eating among Undergraduate Students

Payton Matthews

Faculty Mentor: Kimberly Doughty

Booth: 14

Abstract:

College-aged individuals are at greater risk for developing eating disorders than any other age group. It is estimated that at least 20% of college students have suffered from an eating disorder. Evidence suggests that social media use and substance use, both of which are prevalent among college students, may be associated with disordered eating. This research aimed to describe students' perceptions of their eating behaviors and to determine whether substance use, and social media use are associated with disordered eating among Fairfield University students. A total of 63 participants completed on online survey via Qualtrics that included a disordered eating scale and questions about social media and substance use. There was a significant correlation between the number of harmful types of social media content students engaged with (e.g., low-calorie recipes, fitness influencers, etc.) and higher score for disordered eating. There was no significant correlation between disordered eating and substance use, time on social media, engagement with body positivity content on social media, or class year. These findings suggest that the amount of harmful social media content students engage with is associated with disordered eating; however, further research is needed to determine whether certain types of social media lead to disordered eating.

Perceptions of Medical Error among Nursing Students and Experienced Nurses

Julianne Gildea

Faculty Mentor: Kimberly Doughty

Booth: 15

Abstract:

In 2017, studies found that medical errors account for as many as 251,000 deaths per year in the United States, making medical errors the third leading cause of death. This study explored the perceptions of medical error among nursing students and experienced nurses. The purpose of the study was to determine how the two groups' perceptions compared with one another and whether they had similar ideas. A total of 12 individuals (6 in each group) voluntarily participated in a phone interview. Interviews were transcribed and coded to identify common themes, grouped into the following categories: reasons for medical error, most common types of medical error, reasons for underreporting medical error, predictions for the future, education, and preventative measures.

Health Care Trust among Young Adults

Claire Bellucci

Faculty Mentor: Kimberly Doughty

Booth: 16

Abstract:

The purpose of this study was to assess the degree to which young adults (ages 18 to 22 years) trust healthcare providers and to determine whether gender representation, racial/ethnic representation, and parental frequency of healthcare visits are associated with those trust levels. In the current literature, there is little research on health care trust among young people and how parents' interactions with healthcare providers might influence the health-seeking habits of their newly adult children. Fifty people, ages 18 to 22, participated in this study. A 23-question Qualtrics XM survey was distributed. The variables assessed were frequency of doctor visits (by parents and the respondent), gender and racial/ethnic representation in healthcare settings, likelihood of going to the doctor when sick, and health care trust, which was measured by the Health Care Relationship Trust scale (HCR Trust scale). This scale includes thirteen items that each have a score 0-4. Possible scores can range from 0-52, with higher scored indicating increased health care trust.

QR Codes for Instant Access to Educational Content Regarding Low Frequency Skills and Equipment

Jessica Centore

Faculty Mentors: Sally Gerard, Constance Cozens

Booth: 17

Abstract:

Covid-19 sparked a major rise in virtual learning opportunities and utilization of technological platforms. Integrating emerging technologies embraces a learner-centric teaching strategy to support competencies of healthcare workers and to achieve optimal outcomes. At Norwalk Hospital, nurses often rely on hospital Nurse Educators and Resource Nurses to perform low frequency skills on their unit. RNs find it faster than surfing the internet and much faster than searching paper manuals for proper policy and procedures. The purpose of this project is to access educational content through quick response (QR) codes to support low frequency practices. The project seeks to enhance; nurse competency and autonomy, reduce dependency on support personnel, and embrace emerging technology. Interviews with a hospital nurse educator and resource nurse revealed that medical surgical units would benefit from comprehensive education regarding PCA pump operation, continuous bladder irrigation, peritoneal dialysis, IV insertion, chest tube and trach collar care. QR codes for these skills will be displayed throughout the units, in nurses' stations, equipment rooms, break rooms, client rooms, etc. Implementation involves minimal resources and is sustainable. Ideally, instant access to education videos for low frequency skills will promote learner satisfaction, autonomy, and confidence. This intervention is a cost effective, efficient use of technology for Norwalk Hospital.

Saving Lives in Critical Moments: A Mnemonic Guide for Nurses

Afaf Akid

Faculty Mentor: Sally Gerard

Booth: 18

Abstract:

Cardiopulmonary resuscitation (CPR) is a critical procedure that aids in reviving blood flow and oxygen to vital organs during cardiac arrest or respiratory failure. The likelihood of survival from cardiac arrest significantly increases with bystander CPR, potentially doubling or even tripling the survival rate. However, due to the high stakes involved, nurses may experience stress and anxiety when dealing with a patient in cardiac arrest, leading to challenges in remembering the necessary steps of the procedure. This project highlights the difficulties that registered nurses at Bridgeport Hospital face in such situations, as revealed by a survey. To help address this issue, we propose the use of a reference card with a mnemonic device to aid in memory retention. The method is to assess the data provided, develop CPR tools for nurses, and support the tool with education, including simulation when possible. By having these resources readily available, nurses can feel more confident in their ability to perform CPR, ultimately leading to better patient outcomes.

Generational Considerations in Nursing and Their Implications on Improving Unit-Based Culture

Madeline Farrell

Faculty Mentors: Sally Gerard, Laura Tallberg

Booth: 19

Abstract:

The nurses of recent generations (Gen Z, Millennials, Gen X, Baby Boomers) have a mutual perspective and a unique sense of self through which they experience the world. These generational personalities differ between each other, and each constitutes a set of collective behavioral characteristics that are distinct and palpable throughout the nursing workforce. Conflicting personality traits can have negative implications on staff and patient outcomes, as well as unit culture overall. The aim of this study is to distinguish the identified traits specific to each generation, explore how they conflict, assess the unit-based implications of intergenerational conflict, and propose interventions to reduce workplace generational conflict and improve unit culture overall.

The Benefits of an Insulin Teaching Tool at Discharge for Patients with Diabetes

Lourdes Leguiza

Faculty Mentors: Sally Gerard, Katherine Saracino

Booth: 20

Abstract:

As more patients are diagnosed with Diabetes each year, it is important that we provide them with useful and clear instructions on how to take care of themselves. This project focuses on the importance of providing an insulin teaching tool for patients being discharged from the hospital on insulin, a high risk medication. The tool includes how insulin works, how to self-administer, and the importance of daily use. It is easy to follow with visuals to help patients understand their needs, and impacts nursing practice by reinforcing patient teaching and serving as a home reference. A simple tool that educates patients with Diabetes can help increase adherence to their treatment plans and in turn lower hospital readmission rates.

Implementation of SurgiCount: A Means to Reduced Retained Surgical Items

Brooke Jackson

Faculty Mentors: Sally Gerard, Sarah Hirx

Booth: 21

Abstract:

Retained surgical items (RSI) continue to be amongst the most commonly reported Sentinel Events by the Joint Commission each year. Although they continue to occur, RSIs are categorized as a never event, meaning that they should not happen if proper safety protocols are followed. These events can cause extensive patient harm, as well as large medical and legal costs for hospitals. This research project aims to evaluate the efficacy of prevention methods related to RSIs, specifically Stryker's technological surgical count tool, SurgiCount. After presenting the applicable research, the project will propose the implementation of the SurgiCount system in the operating rooms of all Hartford Healthcare surgical units. Benefits to this implementation would include a reduced cost in expenses related to RSI events, as well as reduced time in the operating room spent looking for a missing item. Challenges that may arise would be related to the lack of resources to educate and train staff to use the SurgiCount system. These obstacles could be overcome through a plan of education and ongoing support from the per-op education team from Hartford Hospital, who are experts in the use of this technology. Implementation of this system could reduce the number of retained surgical item events, as well as allow for internal reporting of count discrepancies in the operating room.

Adherence to Daily Chlorhexidine Bathing Procedures for Patients with Central Lines

Ashley Sandfort

Faculty Mentor: Sally Gerard

Booth: 22

Track: Community-Engaged Learning

Abstract:

Adherence to Safety Protocols by Healthcare Workers are an Essential Element of Infection Prevention in Hospitals. One of the biggest areas of concern for hospital acquired infections (HAI) are Central Line Associated Bloodstream Infections (CLABSI), which result in approximately 28,000 deaths and approximately $2.3 billion in added costs to the U.S. healthcare system each year. Research supports daily patient bathing with chlorhexidine gluconate (CHG) has been identified as one of the essential steps in preventing CLABSI in the hospital for patients in critical care settings.

An Evidence-Based, Standardized Communication Tool for Registered Nurses and Assistive Personnel

Rene Zelaya Favila

Faculty Mentors: Sally Gerard, Belinda Seak

Booth: 23

Abstract:

Communication between Registered Nurses (RNs) and Assistive Personnel (AP) is crucial for patient safety and quality of care. It is critical that Assistive Personnel have essential information regarding the patient (e.g., ambulation status, preferred language of communication, wounds, drains, and ostomies) in order to meet the patients' needs and provide patient-centered care. Moreover, lapses in communication have been found to be one of the major sources of preventable errors in the medical setting. Therefore, a standardized process for communication is strongly recommended by the Institute of Medicine and the existing peer-reviewed literature. However, there are challenges in the adoption of standardized tools by healthcare units. This project aims to show the evidence basis supporting adoption of a standardized tool for the communication between RNs and AP and develops a new tool. This project reviews the existing literature of the main communication tools currently used, and surveys AP and RNs at a surgical unit in St. Vincent's Medical Center in Bridgeport, CT, about their needs and perspectives. This information is used to develop a communication tool to be used at the change of shift that is useful and easy to use. The desired outcome is the use of this tool to increase and improve communication between AP and RNs, which would then result in increased patient safety, improved quality of care, and improved teamwork.

Development of an Evaluation Tool to Assess Perioperative Clinical Experiences for Student Nurses

Hannah Dellecave

Faculty Mentors: Sally Gerard, Sarah Hirx

Booth: 24

Abstract:

Student nurses rely on clinical experiences to assist their development of essential nursing skills and fundamental understanding of different workplace settings. Conventional nursing clinical placements are typically on medical-surgical floors, mental health departments, community centers, geriatric facilities, and pediatric settings. However, without any experience in settings such as critical care, perioperative nursing, and emergency medicine, it is difficult to attract nursing students to these clinical areas. In 2022, Hartford Hospital implemented a Perioperative Clinical Transitions Program to provide senior nursing students with exposure to the perioperative setting and help combat the nursing shortage in the field of perioperative nursing. Providing students with this opportunity enhances clinical knowledge and provides an optimized recruitment strategy for the field. To ensure students are receiving the maximum benefit from this experience, it is critical that student feedback is taken into consideration. The objective of this project was to develop a valid, relevant, comprehensive evaluation instrument that serves to improve the clinical experience for unlicensed nursing students. The tool to be implemented would be disseminated using Google Forms for accessibility and would be completed by students who complete the program. Benefits of the evaluation include accurate, anonymous, measurable results that provide a framework for improvements to be made. Limitations include the small population size, as the program accepts four nursing students each cohort. However, this instrument provides a vehicle to give students a voice that impacts their education and improves future cohort experiences.

Recognizing Signs and Symptoms of a Stroke in the Prehospital Setting for Early Intervention

Meghan Dealy

Faculty Mentors: Andressa Goncalves, Katherine Saracino

Booth: 25

Abstract:

When a person is having a stroke outside of the hospital, it can be alarming for everyone involved. One reason why strokes are so nerve-wracking is that there is a knowledge deficit about what the symptoms are and how to help. This presentation is focused on educating the community on the signs and symptoms of a stroke so that people are more confident in recognizing they need medical help. These symptoms include unilateral weakness in the face or arm, sudden slurred speech, blurred vision, and loss of balance. When the person or bystanders confirm the person is in fact having a stroke, they will be less hesitant to call 911. If the client enters a hospital setting within four hours of the onset of stroke symptoms, a lifesaving drug called tissue plasminogen activator can be administered. This drug, also known as tPA, is a thrombolytic that destroys blood clots. TPA can decrease the severity of stroke symptoms and increase the chance of a full recovery. People call 911 faster the more educated they are on strokes.Bystanders are extremely important when deciphering whether to call for help. Therefore, it is important to educate not only the patient but the community as well. Keywords: Stroke, BEFAST, signs and symptoms of stroke, recognizing stroke symptoms.

Maternal and Neonatal Benefits of Continuous Rooming-In in the Postpartum Hospital Setting

Isabella LaGrego

Faculty Mentor: Andressa Goncalves

Booth: 26

Abstract:

Rooming-in is a postpartum technique practiced nationwide on numerous maternity units that keep the mother and newborn in the same room after birth continuously, throughout the postpartum hospital visit. After completing seventy-two transition clinical hours on the maternity unit at Greenwich Hospital through the Bridges program, many nurses on the floor were seen scrambling to provide an explanation to postpartum mothers who would request that their baby spend the night in the nursery. This research project looked to identify the benefits that rooming-in provides to the mother, newborn, and nursing staff on the unit. Overall, rooming-in was found to impact mom and baby in many positive ways, such as the ability for the mother to “learn the baby's cues and techniques for soothing baby” (McRae et al., 2023), “shorter hospital stays” (Shackleford et al., 2023), and “facilitate skin-to-skin care and on-demand breastfeeding” (Dani et al., 2023). Additionally, continuous rooming in allowed for the nurses to better assess the mother’s ability to care for the newborn and provided “opportunities for nurses to provide additional education and support, if needed” (Shackleford et al., 2023). Using current evidence-based literature, an infographic was created in an effort to provide maternity nurses with a resource they can use to educate new mothers on the various benefits of practicing continuous rooming-in, and why their hospital encourages rooming-in to their patients.

The Importance of ERAS Education for the Surgical Patient

Emily Clausi

Faculty Mentor: Andressa Goncalves

Booth: 27

Track: Community-Engaged Learning

Abstract:

Surgeries occur around-the-clock in the hospital setting, whether the patient electively or emergently needs a procedure. Despite the benefits that surgery can provide to patients, there are many risks and possible complications. The surgical nurses on Yale New Haven Hospital's East Pavilion 6-5 Unit cared for long-term patients and treated unexpected obstacles in the postoperative period. These unfavorable complications lead to longer hospital stays, poorer healthcare outcomes, increased costs and readmissions, and lower client satisfactions. Studies have shown that the implementation of Enhanced Recovery After Surgery (ERAS) protocols in surgical hospital units can improve the preoperative, intraoperative, and postoperative periods. This research presentation focuses on the benefits of initiating ERAS protocols in daily patient care such as timely removal of drains and tubes, chewing gum, minimal opioid use, and early mobilization. The introduction of ERAS programs throughout the healthcare system have been slow as many providers continue to practice traditional care methods. The infographic created for nurses helps bring awareness to the evidenced-based protocols, provides education on various care practices, and presents a historical background on the ERAS program. This resource can be utilized by nurses caring for patients to improve their postoperative healing outcomes from any surgical procedure.

Safe Sleep Practices for Infants

Nicole Solari

Faculty Mentors: Ashley Antonucci, Rose Iannino-Renz

Booth: 28

Abstract:

Approximately 3,400 sudden unexpected infant deaths (SUID) occur each year in the U.S. alone (CDC, 2022). The causes of these deaths include sudden infant death syndrome (SIDS), unknown causes, or accidental suffocation or strangulation in bed. Nearly every one of these deaths could have been avoided if proper safe sleep practices were in place. Evidence suggests a strong correlation between caregivers' behavior and practices at home mirroring that of healthcare providers and nurses in clinics and hospital settings (Walcott et al., 2018) (Frey et al., 2020). Hospital staff modeling safe sleep practices will increase caregivers' proper action upon discharge home. During my time on 7-3, Yale New Haven Children's Hospital Pediatric Neurology Unit, infants were found sleeping in an unsafe environment that did not follow safe sleep practice protocol. The evidence-based literature presented in this project explains the most up-to-date safe sleep practices to be followed by anyone caring for an infant including caregivers, parents, nurses, doctors, and all members of the healthcare team. A poster has been created in accordance with the research presented in this project. This poster is designed for 7-3 unit nurses and families to reiterate the importance of safe sleep practices both at home and in the hospital and is to be hung in any patient's room who is sleeping in a crib during their admission.

Strategies to Prevent/Manage Childhood Obesity

Jennifer Rocco

Faculty Mentor: Ashley Antonucci

Booth: 29

Abstract:

Childhood obesity is a multifaceted and complex disease process that is spreading rapidly throughout our country. Being obese as a child sets one up for a life of co-morbidities and even premature death, so it is imperative to address this public health issue. Research has shown that increased parental involvement leads to better anthropometric outcomes in children, therefore this project's aim is to educate parents on the strategies needed to prevent or manage their child's obesity. This project encourages parents to focus on four main areas of health: diet, exercise, sleep, and screen time by providing specific, measurable, and attainable strategies that can be implemented into the child's daily life. Roles of the RN include advocating for and educating patients. Thus, a brochure was created to distribute to parents that may be struggling to promote a healthy lifestyle for their child. The brochure is clear, concise, and can easily be taken home so that parents can refer to the information whenever they wish. By educating parents on the consequences of childhood obesity, and strategies to prevent/manage it, there is hope that we can create a healthier tomorrow for the pediatric population.

The Effects of Breastfeeding in Infants with Neonatal Abstinence Syndrome

Erini Rigas

Faculty Mentor: Ashley Antonucci

Booth: 30

Abstract:

This research project focuses on the positive effects of breastfeeding in infants with neonatal abstinence syndrome. In the last 20 years, the incidence of neonatal abstinence syndrome has increased exponentially. Symptoms of NAS include tremors, poor feeding, excessive crying/high-pitched cry, GI distress, and breathing problems. This project focuses on the infants with this syndrome and the education of families in the promotion of breastfeeding to decrease the severity of symptoms. An infographic was made to include the most up-to-date and relevant information for families on the importance of breastfeeding and allows nurses to educate families more easily and effectively. This project and the infographic show the findings of the research in which breastfeeding can reduce the severity of NAS symptoms, decrease the length of stay in the hospital, and reduce the need for pharmacological treatment for withdrawal symptoms. Breastfeeding is also shown to increase skin-to-skin contact which can improve the mother-infant dyad. Evidence-based research has shown that breastfeeding should be promoted in all mothers and is the first-line treatment for NAS before pharmacological treatment. This project and infographic identify the learning needs for families of NAS infants and recognize the research on the positive effects of breastfeeding for this syndrome.

Controlling Pediatric Asthma to Reduce Related Hospitalization

Samantha Whitman

Faculty Mentor: Ashley Antonucci

Booth: 31

Abstract:

Pediatric asthma is the most common chronic respiratory illness in the world, currently affecting 8.3% of children under the age of 18 in the United States. The disease is a respiratory illness in which, when exacerbated, the airways contract, become inflamed, and produce excess mucus. These symptoms cause increased work of breathing, shortness of breath, and decreased oxygen perfusion. Although there is no cure for asthma, various ways exist to reduce and manage its symptoms. However, inadequate management of asthma and its symptoms are a leading contributor to increased acute care visits and hospitalizations. Many patients and guardians are under-informed on the appropriate standards of care which ultimately results in exacerbations. This project examines six scientific studies that evaluate the impact of controlling pediatric asthma on the reduction of poor health outcomes. The study results find that asthma control can be achieved through a combination of disease education, avoiding triggers, medication adherence, and controlling comorbidities. Compliance with maintaining control will ultimately result in more positive patient outcomes and increase the overall quality of life. This will also produce less strain on the healthcare system with reductions in pediatric appointments, hospitalizations, and ambulance transportation.

Reducing Home Medication Errors Through Improved Discharge Education for Pediatric Caregivers

Emily Vandale

Faculty Mentor: Ashley Antonucci

Booth: 32

Abstract:

Medication administration is a complicated process involving pharmacologic knowledge, mathematical calculations, and exact timing and dosage. Patients and caregivers are often discharged lacking the education and experience to manage their medication regimen. Pediatric patients are especially at risk for medication errors in the home setting which can cause adverse effects, reduce medication effectiveness, and result in rehospitalization. On the 7-3 Pediatric Unit at Yale New Haven Hospital caregivers are often provided discharge education and materials which can be confusing and create the opportunity for medication errors in the home setting. Evidence-based literature reviewed during this research project explores factors that lead to the occurrence of home medication errors and discuss interventions to prevent them. Caregivers with low health literacy, complex medication regimens, and liquid dosing prescriptions all contribute to medication errors at home. Based on this research, a bulletin was created to highlight nursing interventions for the discharge process, including: teach-back education methods, medication reconciliation, provision of standardized dosing equipment, and simplification of written materials and labels.Key words: home medication error, medication administration, pediatric caregivers, health literacy, complex medication regimen, liquid dosing, teach-back, medication reconciliation, standardized dosing equipment

The Importance of Alteration in Pressure Injury Documentation

Avery O'Connell

Faculty Mentor: Cara Tietjen

Booth: 33

Abstract:

This research project focuses on the issues presented within the hospital concerning inconsistency with precision towards the nursing-based documentation of pressure ulcers. This project focuses on a neurologic and orthopedic-based floor with patients not fully mobile enough to prevent individual pressure injuries. While observing the nursing staff and patients of Norwalk Hospital, the issue identified was a need for further completion of the documentation of skin. Pressure injuries are a prominent issue among hospitals as they can lead to complications within a patient's care plan. Frequently, there were specific instances where nurses did not accurately do the documentation on the unit by not providing the correct anatomical identification site, along with the improper staging of the level of pressure injury. Improper documentation of pressure ulcers can lead to crucial issues, including serious infections such as sepsis. Nurses play a vital role in preventing and treating pressure injuries, yet improper documentation of pressure injuries can hinder effective care and management of these patients within the hospital setting. The evidence-based research literature included provides information regarding the potent effects of improperly recording results of skin assessments and the poor patient outcomes that result. While speaking with my clinical instructor and staff nurses on 7W, a new clinical tool was identified to benefit the issues associated with skin documentation of pressure injuries. Doing so would also lead to an improvement in patient outcomes regarding earlier treatment options. Therefore, a documentation tool was created to obtain more accessible results of skin assessments with easy-to-read cues and drop-down descriptions to help correctly identify the stage of pressure ulcers at the correct location. The in-service presentation of this documentation tool impacted the outlook of nurses by reducing stress in documenting and allowing for much clearer results in patient charts.

The Importance of Tracheostomy Education

Katrina Zucconi

Faculty Mentors: Cara tietjen, Rose Iannino-Renz

Booth: 34

Abstract:

Patients with a tracheostomy require a high standard of care due to their conditions, this standard can be hard to meet sometimes based on where the patient is placed in a hospital due to census on the floor. Due to this sometimes nurses don't have enough experience in this care to provide proper care. When caring for a patient with a tracheostomy, care must be completed at least once a shift if not more, and care should be completed in a bundle. Care includes clearing the stoma site, skin inspection, changing the dressings, suctioning, and making sure the patient's head is in a proper position.The evidence-based literature included in this project addresses the proper technique to complete care for a patient with a tracheostomy.Furthermore, the evidence-based research explains the importance of tracheostomy care in regard to patient safety and quality of care. In connection with the research presentation, an educational infographic was created for Registered Nurses on the proper skills and techniques needed when caring for a patient with a tracheostomy. The goal is for the infographic to be at the nurse's station, where nurses have access to it when needed for tips and guidance on care.Keywords: educational tool, tracheostomy, Registered Nurse

The Benefits of Chlorhexidine Gluconate Bathing to Prevent Hospital Infections

Francesca Vinluan

Faculty Mentors: Cara Tietjen, Rose Iannino-Renz

Booth: 35

Abstract:

Hospital-acquired infections are one of the leading causes of death in the United States. According to the Centers for Disease Control and Prevention of National Healthcare Safety Network, hospital acquired infections include central line-associated bloodstream infections (CLABSI), catheter-associated urinary tract infections (CAUTI), surgical site infections, hospital-onset Clostridium difficile (C diff) infections, and hospital-onset methicillin-resistant Staphylococcus aureus(MRSA) bacteremia (Reagan, 2019). CLABSIs alone cause 28,000 deaths each year (Reynolds, 2021).There are interventions to prevent these infections, one of which is the use of chlorhexidine gluconate (CHG). This is an antiseptic solution that stays on the skin of a patient longer than regular soap. While observing the 7W ortho/neuro unit in Norwalk Hospital, nurses and patient care technicians were implementing the use of CHG baths on patients with central lines and urinary catheters. This research project evaluates several studies showing the impact CHG baths have on reducing the rates of infection. Results show that daily CHG bathing decreases the risk of CLABSIs, CAUTIs, C diff, and MRSA. Studies have also shown that there is a knowledge deficit regarding CHG baths, which contributes to the increased risk of patients acquiring infections. By educating the nursing staff on proper CHG bathing and the rationale for how CHG can reduce infections, there will be decreased rates of hospital-acquired infections (Reynolds, 2021). Keywords: chlorhexidine gluconate baths, infection prevention, central line

The Importance of Professional Interpreter Services for Limited English Proficient Patients

Samantha Straub

Faculty Mentors: Cara Tietjen, Rose Iannino-Renz

Booth: 36

Abstract:

Approximately twenty-five million Americans report that they have limited English proficiency (LEP). Every year, the United States population becomes more racially, culturally, and linguistically diverse. As more immigrants with LEP come to the U.S., more attention needs to be paid to language and cultural barriers in health care. Health care disparities amongst this population include decreased quality of care, errors in interpretation, and omission of important information. Despite this ongoing issue, research indicates that interpreter services are being underutilized. During my time on the 7W Medical Surgical Unit at Norwalk Hospital, I noticed a substantial population of LEP patients. Norwalk Hospital provides a variety of interpretation services, including the use of a Martti, a phone with two receivers, and interpretation through the Vocera phone. However, despite available resources, I started to observe that these devices were not being used as frequently as they should be, as well as a dependence on family members to communicate with these patients. It is common for health care workers to use ad hoc interpreters or interact less so with their LEP patients. Ad hoc interpreters include family members, friends, or bilingual staff who are not trained adequately in interpreting. Although this may be more convenient for the nurse, this can lead to risk for both the patient and provider. This research project examines the importance of using professional interpreters when caring for LEP patients. Findings indicate that by doing so this leads to improved quality of care, therefore increased patient satisfaction, lessened healthcare disparities, and reduction in poor health outcomes. By providing education to nurses about the risks that come with underutilizing professional interpreters, LEP patient outcomes can be improved.

Benefit of Nurse Education on The Proper Use of The External Catheter In Female Patients

Alexandra Miko-Rydzaj

Faculty Mentors: Cara Tietjen, Katherine Saracino

Booth: 37

Abstract:

The PureWick female external urinary catheter has become more commonly used within the hospital over the last seven years. The PureWick is used in the female population, specifically those with a need for urinary management. On average it is found that females are more likely to need to use a catheter during their time at the hospital. It wasn't until 2016, that this device was implemented into hospitals leaving a need for education. This research project examines the benefit of nurse education on the proper use of the PureWick external female catheter and patient outcomes associated with it. Significant findings show using the device correctly has a direct correlation to better patient outcomes. It also was found that a mnemonic device can help nurses remember key information that can then be applied to the use of the PureWick.
Key Words: Urinary incontinence, female external collection device, PureWick, mnemonic device

The Benefit of Psychosocial Support for Median Arcuate Ligament Syndrome (MALS) Patients

Ryann Barton

Faculty Mentor: Caroline McArthur

Booth: 38

Abstract:

Median Arcuate Ligament Syndrome (MALS) is an incredibly complex and controversial disorder involving the celiac artery and diaphragm fibers, resulting in chronic abdominal pain, weight loss, and fatigue (Stiles-Shields et al., 2018). Patients that are diagnosed with MALS hope to find relief following exhaustive diagnostic studies, which in turn can take a toll on their physical and psychosocial health. While medical interventions have advanced to alleviate this condition, multidisciplinary teams overlook the psychological and social implications caused as well. Subsequently, the MALS patient population lacks educational information regarding the resources available to them. Patients are experiencing less holistic support during their care, resulting in poorer long-term outcomes. This learning project focuses on providing the MALS patient population with a tool that references several psychosocial support opportunities if they wish to seek additional help outside of their medical plan of care. Through examining peer-reviewed collections of work regarding the MALS population, it was indicated that patients with this condition struggle with their mental health in direct relation to their physical condition and indeed lack psychosocial support in the perioperative process. Significant findings demonstrate that when MALS patients are provided with additional support, there are increased positive short- and long-term outcomes as well as overall satisfaction with their quality of life.

The Benefits of Preoperative Education On PCA Use by Postoperative Orthopedic Patients

Katheryn Schneider

Faculty Mentor: Caroline McArthur

Booth: 39

Abstract:

Pain is a crucial part of the nursing assessment, especially on a surgical unit where acute postoperative pain is the chief complaint. The pain scale used in the clinical setting is highly subjective, so an alternative to traditional nurse-administered analgesia is patient-controlled analgesia (PCA). PCA is a “method that allows a patient to self-administer small boluses of analgesic to relieve the subjective pain” (I-Ting et al., 2018). As of 2013, “forty-nine percent of patients reported not knowing if they would receive medicine when they pushed the PCA button, and of these, 22% believed that this uncertainty made their pain worse” (Patak et al., 2013).The burden of the misuse of PCA is attributed to patient education. In the postoperative period, patients are in pain, uncomfortable, and may have altered levels of consciousness, making teaching less effective. Research highlights the effects of standardized preoperative patient education for PCA on postoperative pain. The results include lower mean pain scores for patients who received the standardized preoperative teaching intervention (Bacher, 2023). Improved preoperative teaching about PCA improves postoperative pain management leading to faster recovery times and shorter hospital stays, which are also believed to increase patient satisfaction (Kang & Kwon, 2022). Further research is necessary to explore the effects of improved preoperative teaching and to create standardized teaching programs for PCA.

The Importance of Incentive Spirometer Use for the Post-Operative Patient

Kennedy Wright

Faculty Mentor: Caroline McArthur

Booth: 40

Abstract:

Surgery is a branch of medicine that intends to explore, remove, repair and treat the human body at the time of disease. While surgery is beneficial to the patient population in many ways, patients are also at an increased risk to experience complications in the time period following the procedure. Pulmonary complications can be common after surgery due to the disruption of normal lung movement while a patient is under anesthesia. One of the most common postoperative pulmonary complications (PPCs) is atelectasis when the alveoli cannot inflate properly, leading to a partial or complete collapse of the lung (Eltorai et al., 2019). The evidence-based literature presented in this project addresses the importance of incentive spirometer use after surgery in order to prevent these pulmonary complications. Significant findings demonstrated that use of the incentive spirometer after surgery reduces the rate of PPCs (Toor et al., 2021). However, there continues to be a need for more research on this subject. While observing patients on the Surgical/Orthopedic Unit at Stamford Hospital, it became evident that many patients do not utilize the incentive spirometer because of a lack of knowledge on why and/or how the device should be used. The goal of this project is to close this learning gap and increase positive patient outcomes after surgery.

Venous Thromboembolism (VTE) Prophylaxis Education for Hospitalized Patients

Julia Fritz

Faculty Mentor: Caroline McArthur

Booth: 41

Abstract:

Hospitalized patients are a vulnerable population for venous thromboembolism (VTE) complications such as pulmonary embolism (PE), deep vein thrombosis (DVT), or ischemic stroke (Kumari et al; 2023). There are many prophylactic measures in place to prevent VTEs, however, many patients are not properly educated and do not understand the evidence based practice behind them. Through observation on Stamford Hospital's 36 bed ortho/surgical unit, the majority of patients were unaware of why they had sequential compression devices (SCD) on their calves, why they were encouraged to get out of bed so soon after surgery, or why they were being given anticoagulation medications. By implementing a simple infographic to provide to the patients they will be easily educated and more likely to follow prophylaxis guidelines. "Education sessions on the prophylaxis of venous thrombosis in high-risk patients can lead to the use of correct prophylaxis and maybe it reduces the frequency of deep vein thrombosis and its complications" (Valizad Hasnoolie et al; 2020). Overall, increasing education surrounding VTE prophylaxis has a positive impact on VTE prevention. An infographic with accurate images to Stamford Hospital's VTE prevention equipment and medications was created to aid the nursing staff in educating their hospitalized patients on why they are receiving this type of treatment while highlighting its importance.

The Importance of Opioid Education and Pain Management in the Postoperative Patient

Megan Hansen

Faculty Mentor: Caroline McArthur

Booth: 42

Abstract:

Pain management is crucial to achieving comfort during recovery and optimizing patient outcomes after surgery. Many patients experience acute pain postoperatively. Most times, that pain is moderate-to-severe and can be managed by a variety of pain medications including opioids. On the surgical unit, there were patients who were experiencing acute pain and many were not feeling relief. These patients were noted to not be using opioids in their current pain management regimen. Opioids are used for acute pain in a short-term period and tend to be a great option to manage postoperative pain. Many patients struggle with taking opioids based on their personal fears and the side effects. However, with enough knowledge, it can be known that opioid analgesics can be an option to prevent severe pain. This project aims to provide education for patients to allow them to make an informed decision when it comes to including opioid analgesics in their postoperative care.

The Benefits of Bedside Shift Report on Patient Safety

Kassandra Almanzar

Faculty Mentor: Caroline McArthur

Booth: 43

Abstract:

Shift report at the beginning and end of each shift is a crucial part of the nurse's role. It allows for the incoming and going nurse to take the time and discuss the patient's care that occurred throughout the day or night. Shift report typically occurs at the nurse's station or in a private area of the hospital. During this time, the patient is left unattended for quite some time making the patient more susceptible to injury. Having shift report change to the bedside setting improves the nurse's accountability by facilitating clear communication amongst the nurses. Bedside shift report also ensures that safety checks on the patient and their environment are being completed at the beginning of the shift. Research has shown a decrease in patient falls and medication errors. However, the change has not been implemented in many hospitals due to the lack of education provided to staff regarding the benefits bedside shift report can have on patient safety. A checklist is a great tool to guide shift report at the bedside to ensure patient safety and help nurses apply best practices.

Implementing a Nurse-Driven Protocol to Reduce Catheter-Associated Urinary Tract Infections

Anna Walcek

Faculty Mentor: Christina Vermes-DeStefano

Booth: 44

This research was also presented at *National Student Nurses Association Conference 2023 71st Annual Convention, Nashville, TN*

Abstract:

Catheter-associated urinary tract infections (CAUTIs) are one of the most common hospital-acquired infections. Many patients on the surgical-trauma stepdown unit at Yale New Haven Hospital have indwelling urinary catheters(IUCs).These patients are at an increased risk of infection with prolonged catheterization. Evidence-based literature revealed implementing a nurse-driven protocol (NDP)to remove an IUC when no longer indicated reduces the risk of infection. Furthermore, the timely removal of IUCs reduces morbidity and mortality related to CAUTIs. Prompt removal of IUCs also increases patient comfort and decreases the length of hospital stay. This research led to the development of a NDP flowsheet that allows nurses to follow an algorithm to ensure catheters are removed when no longer indicated without provider's orders. This autonomous decision made by nurses is crucial to patient safety and the reduction of CAUTIs.

The Importance of Early Mobilization for Post-Operative Patients

Reese Larouco

Faculty Mentors: Christina Vermes-DeStefano, Katherine Saracino

Booth: 45

Track: Community-Engaged Learning

Abstract:

Early mobilization is an essential component in the postoperative period. Early mobilization decreases potential post-operative complications, improves recovery, decreases inpatient hospital stay, increases the ability to ambulate independently and ability to complete activities of daily living. Patients' lack of knowledge on the topic, the fear of falling and pain are barriers that prevent patients from participating in early mobilization. Research shows an exceptionally low injury rate when a patient is mobilized with a health care member. Additionally, pain relief is the most common result of early mobilization. Despite this fact, there is a staggeringly low occurrence of mobilization for patients on medical units; one study revealed that 73% of patients did not walk at all during their inpatient stay (Kalisch, 2014).While completing a clinical experience on a trauma surgical unit at a large urban hospital, a lack of patient knowledge on the importance of early mobilization was identified. This evidence-based research project presents the importance and provides information to break patient barriers to educate and encourage early mobilization in the post-operative population. The education of post-operative risks and insurance of patient safety by the health care team during mobilization is significant to patient compliance. To further educate patients on this unit, an infographic was created for staff to provide to patients at the bedside.

Benefits of Nonpharmacolgical Pain Management for the Postoperative Patient

Kayla Brosnihan

Faculty Mentor: Christina Vermes-DeStefano

Booth: 46

Abstract:

This research project focuses on the overuse of pharmacological pain medications for the postoperative patient and how the implementation of nonpharmacological interventions could be a solution. On the surgical / trauma step down unit at Yale New Haven Hospital, many patients experience high levels of postoperative pain and are prescribed strong pain medications, such as opioids, to manage it. There are many problems related to prescription pain medications for pain management; These include side effects, opioid dependence, and expenses. Conversely, nonpharmacological pain interventions have many benefits that make them a valuable intervention for the postoperative patient. The evidence-based research explains that nonpharmacological techniques such as cognitive behavioral therapy, acupuncture, music therapy, relaxation techniques, guided imagery, and emotional support are all helpful in achieving successful pain management. These interventions are less expensive, have fewer side effects, can be performed when the patient is not due for a prescription pain medication, and can easily be continued after discharge. In connection to this research presentation, an infographic was created for the nurses to educate postoperative patients on the different types of nonpharmacological pain interventions and how to use them to manage pain levels.

Education and Screening Improvements for Early Recognition of Sepsis in Adult Clients

Rachel Koblitz

Faculty Mentors: Christina Vermes-DeStefano, Rose Iannino-Renz

Booth: 47

Abstract:

Sepsis results from the complication of an infection and is the cause of over five million deaths annually around the world (Hunt, 2019). There is no conclusive diagnostic test for sepsis, and signs and symptoms can be vague, making the diagnosis easy to miss. There is a need for improved nursing education on the signs and symptoms of sepsis to facilitate early interventions. This project will present a poster with a new acronym, “MELT” to help nurses remember the early symptoms of sepsis in adult patients. This poster can be displayed on units and used during educational classes for nurses of all experience levels. Screening tools should be implemented on adult units to screen all patients for sepsis using their vital signs, assessments, and laboratory results. This project will also include a screening tool that can be implemented into Epic to integrate the “MELT” acronym into nursing documentation flowsheets. Enhanced education for nursing staff and the implementation of screening tools can improve outcomes by helping patients to receive earlier sepsis diagnosis and treatment.

Preventing Medication Errors Through Medication Checks

Sophia Moise

Faculty Mentors: Christina Vermes-DeStefano, Katherine Saracino

Booth: 48

Abstract:

Medication errors impact patients every day. They are defined as “preventable adverse events that can cause harm to patients” and they can occur “at any step along the medication administration process, from ordering to administering medicine to a patient” (Saleem, 2023). Most medication errors involve mistaken drug choice, incorrect dosage, skill-based mistakes, memory lapses, and/ or knowledge-based mistakes (Hughes & Robinson, 2019). New technology, such as barcode scanning technology for electronic medical records, has caused a decrease in harm incidents from medication errors (Saleem, 2023), but these errors still occur. Nurses often rely on mental medication checks to administer correct medications to patients, but that is not always enough to keep a patient safe. At Yale New Haven Health on the 6-4 unit, a near-miss medication error was observed. This incorrect medication could have harmed the patient that it was almost administered to. Observation of this near-miss incident inspired the creation of an extensive checklist in order to prevent something like this from happening again. The checklist that was created gives nurses a physical way to improve patient safety, and their own practice as nurses, by “checking off” the 6 rights of medication administration and making sure their IV drug administration is safe. The checklist is designed to be completed in three locations to maximize its safety potential: the Medication Room, the hallway outside the patient’s room, and at the patient’s bedside. This project aims to reduce the number of medication errors, create better practice for nurses, facilitate better outcomes in all healthcare settings, and create a safer environment for patients.

Nursing Management of Leech Therapy for Post-Operative Patients

Isabel O'Brien

Faculty Mentors: Christina Vermes-DeStefano, Katherine Saracino

Booth: 49

This research was also presented at *National Student Nurses Association Conference 2023 71st Annual Convention, Nashville, TN*

Abstract:

Medicinal Leech Therapy (MLT), has been utilized for centuries. It is primarily prescribed in post-operative reconstructive patients when tissue is threatened by venous congestion. Following replantation or revascularization, venous congestion can lead to tissue and digital necrosis due to poor perfusion. The attachment action of a leech increases perfusion to the site of concern (Pourrahimi et al., 2020). On the surgical/trauma step-down unit at Yale New Haven Hospital, MLT is becoming increasingly prevalent. Among unit staff, a knowledge deficit was identified regarding the purpose of MLT and the proper technique for performing the procedure. The evidence-based research referenced in this study explores priority nursing management of leech therapy, including information on avoiding complications. It also teaches nurses about the importance of MLT in post-operative patients with venous congestion. Nurses typically perform MLT independently of physicians, so it is imperative to be knowledgeable about the intervention in order to improve patient outcomes. Significant findings demonstrate that nurses must constantly assess for leech migration, signs of infection, and excessive blood loss. In an effort to improve clinical practice, a poster was devised to educate nurses on MLT. A video was also linked via a QR code to provide nurses with a visual demonstration of the procedure. With this educational tool, there should be a decrease in complication rates with MLT on the unit.

Combating Cardiac Monitor Alarm Fatigue

Meghan Sweeney

Faculty Mentor: Christina Vermes-DeStefano

Booth: 50

Abstract:

Working in a hospital setting, alarms are unavoidable. Daily exposure to these alarms can potentially lead to them becoming more like background noise. Suddenly, we are conditioned to just silence them without reacting. Alarm fatigue is defined as “desensitization and apathy of healthcare providers to the sound of an overwhelming number of repetitive or simultaneous alarms” (Lewis & Oster, 2019). This is an issue that has increasingly become worse as technology advances and more alarms are added to monitors. On average, nurses respond to 150 to 400 alarms each shift per patient and of those 80-99% are false alarms (Lewandowska et al., 2020). The overwhelming number of false alarms is a big factor in conditioning nurses to become desensitized to the neverending beeping. As a nursing student on my unit 6-4 at Yale New Haven Hospital, I continue to see this issue first hand. Just like other surgical units, this unit has many critical patients with various monitors. Keeping this in mind, the more patients on monitors, the more alarms there are. Over the course of my experience on this unit, I witnessed many nurses either not noticing the alarms going off or silencing them without looking at why the alarm was going off. This research project examines what alarm fatigue is, why it happens and ways it can be avoided by gathering evidenced based information. Significant findings demonstrate that limiting the number of patients on continuous monitoring to only those who need it, providing in-hospital education to ensure staff competency of equipment handling, ensuring proper skin electrode use and handling, as well as changing the default settings on the monitors to accommodate each patient can contribute to a decreased risk of alarm fatigue(Jacques et al., 2016). This poster and educational handout illustrates the strategies to decrease false alarms as well as emphasizes the importance of reacting to every alarm.

The Importance of Early Prevention of Osteoporosis in Postmenopausal Women

Hannah Boyle

Faculty Mentors: Corrine Rotas, Rose Iannino-Renz

Booth: 51

Abstract:

Osteoporosis is one of the most common metabolic bone diseases in the United States. Osteoporosis is characterized by the structure and strength of bones changing resulting in bone strength decreasing. Women are more susceptible to getting this disease compared to men. During menopause, bone loss increases in women as a result of the decrease in estrogen. Fractures related to osteoporosis are an increasing morbidity in the postmenopausal women demographic and can cause a decrease in the quality of life. This research project examines the importance of early prevention of osteoporosis in postmenopausal women. Significant findings found from various scholarly journals include that risk factors for osteoporosis include past fractures, cigarette/alcohol/medication use, and certain medical conditions. Women can help combat the negative effects of this disease through non-pharmacological actions such as maintaining a well-balanced nutrition, calcium & vitamin D supplements, weight-bearing exercises, smoking cessation, reducing alcohol consumption, and fall prevention strategies. Pharmacological interventions are also able to help and can be personalized to each individual through the help of a medical team. There continues to be a knowledge deficit in not only prevention of osteoporosis, but also with the disease itself among women in the United States.

How Educating Patients on Proper Emergency Department Use Can Reduce Overcrowding and Waiting Room Times and Improve Patient Care Outcomes

Celeste Tansey

Faculty Mentors: Corrine Rotas, Rose Iannino-Renz

Booth: 52

Abstract:

Emergency departments are inappropriately used by patients, however there is a significant lack of attention and knowledge behind the elements contributing to this issue, the negative effects on patient care, and how to improve care outcomes. This research project compares factors related to misuse of waiting rooms in emergency departments from recent years and the impact on quality of patient care. Research findings show that there is a significant percentage of patients that visit the emergency room for health concerns that can be appropriately treated in outpatient facilities. Inappropriate usage of emergency rooms leads to overcrowding, poorer patient care outcomes, decreased patient satisfaction, longer waiting room times, as well as other factors that negatively affect quality of care. Educating patients on the proper facilities to attend when seeking medical care as well as the resources available to them can help improve problems associated with emergency department misuse.

Mental Health Resources for Maternity Nurses to Provide to Moms Throughout the First Year Postpartum

Anna Mercurio

Faculty Mentors: Corrine Rotas, Rose Iannino-Renz

Booth: 53

Abstract:

This research project focuses on the importance of an integrated and continuous approach to access to mental health resources and in-depth routine screenings for maternity nurses to provide to moms throughout the first year postpartum period. Due to the lack of continuity and integration among maternity nurses and other maternal healthcare providers, mental health resources and screenings are not well understood by these healthcare professionals and are not made known to the moms they care for. This lack of understanding and education has led to a gap between these groups about how to address mental health issues throughout the entire span of the first year postpartum. The evidence-based literature included in this research project addresses the positive impacts integrated and continual care has on the first year postpartum, including better recognition of high-risk patients, care provided on a more personal level with repetitive screenings for moms deemed “high-risk” within the early days postpartum, more mental health referrals early on, and recognition of physical symptoms of mental health issues along with the psychosocial symptoms. Educating maternity nurses about how to best integrate their postpartum mental health education with other maternal healthcare professionals and begin a more in-depth and continuous care plan for postpartum moms, is the most important step to take in order to reduce the incidence of first year postpartum mental health issues being diagnosed. Along with this research project, a brochure was created for the Bridgeport Hospital Maternity nurses to provide them with postpartum mental health resources available in the surrounding communities of Connecticut. This brochure will help the Maternity nurses connect and integrate care with the healthcare professionals among these different resources to begin initial postpartum care onsite at the hospital while the patient is still admitted, which will then transfer over to the respective resource completely once the patient has been discharged. In doing so, this will allow for continued care and observation of the postpartum mother throughout her first year postpartum.

The Importance of Using a Medical Interpreter With Non-English Speaking Patients

Isabella King

Faculty Mentors: Hannah Zhang, Rose Iannino-Renz

Booth: 54

Abstract:

When a patient comes into the hospital one of the first questions asked is; do you speak english? When the patient says no, there is an extra layer of responsibility that the nurse needs to cover. The hospital is very intimidating to many people, and if the patient doesn't understand the language that is being spoken to them, there is misinformation given and knowledge missed when taking care of patients when their first language isn't English. In a Medical Surgical Unit at Yale New Haven, there are many patients seeking medical care who do not speak English, and the medical team under the Americans with Disabilities Act (ADA) is required to adapt and provide an interpreter (Jacobs et al., 2004). Nurses have full assignments and are busy during their shifts, and easily look over the patients that do not understand them because they do not speak the same language. Even with simple interactions, from asking if they have had dinner to the more complicated conversations about treatment plans and new diagnoses, it is crucial for nurses to provide the expected care and information through an interpreter so that the patient is receiving equal care compared to English-speaking patients. The hospitals provide electronic and in-person interpreters on all floors, but it is the nurse's responsibility to make sure that they are being used in the room anytime a healthcare provider is communicating with the patient. This research project examines six studies, varying across levels of evidence, to evaluate the benefits of using language interpreters with non-English speaking patients. Significant findings demonstrate that using an electronic or in-person licensed medical translator in any conversation decreases future hospital stays, and patients better understand the risk and benefits of treatment and medications (Karliner et al., 2007).

Improving Fluid Balance Documentation Through Patient Participation

Ainsley Nowakowski

Faculty Mentors: Hannah Zhang, Katherine Saracino

Booth: 55

Abstract:

Monitoring the fluid balance of patients in the hospital setting is extremely important to understanding their hydration level, medication effectiveness, and disease progression. Maintaining accurate records of a patient's intake and output is very difficult as patients tend to not be involved or understand how to track their fluid intake and output. On a Med-Surg floor at a large Connecticut hospital patients with congestive heart failure need better tools to help them accurately track their intake and output to optimize health outcomes. The reviewed literature includes audits, an implementation report, a qualitative study, and peer-reviewed articles. The research suggested that inaccuracies in fluid balance reporting are unfortunately common in nursing practice and that this can lead to negative clinical outcomes (Holroyd, 2020). Nurses have multiple patients and many tasks to complete in a given shift, so tracking how much fluid a patient consumes is an added responsibility. Because of the increased workload on nursing staff, this project focuses on educating patients on how to accurately measure their own intake and output to get patients involved in their medical care, increase charting accuracy, and improve clinical outcomes.

Aspiration Pneumonia Prevention Program

Anastasia Mastrocola

Faculty Mentor: Hannah Zhang

Booth: 56

Abstract:

One of the leading causes of hospital-acquired infections is pneumonia. There are different ways for patients to acquire pneumonia in the hospital, however, this project focuses on preventing aspiration pneumonia. Aspiration pneumonia is defined as microorganisms or foreign objects going down into your lungs and causing infection. Non-ventilator – Hospital Acquired Pneumonia (NV-HAP) affects more people than Ventilator Acquired Pneumonia (VAP), has a comparable mortality rate (18.7% vs. 18.9%), and has higher total costs ($156 million vs. $86 million) (Valderrama Miranda, C. J. L., et al, 2018). This large number encompasses a disease that is preventable in most cases. While on East Pavilion 9-7 Unit at the Yale New Haven Hospital, many of the patients had acquired aspiration pneumonia while in the hospital or came in as a patient with the illness. While observing the unit, there were diagrams warning about other preventable infections such as catheter-associated urinary tract infections (CAUTIs), however, there was a lack of warning and signage of hospital-acquired pneumonia. This evidence-based presentation addresses the need for nursing interventions to prevent aspiration in certain high-risk patients, such as patients with strokes, dysphagia, and oropharyngeal cancer. The flyer includes a care bundle that has proven to be effective in other hospital trials in reducing the prevalence of this preventable disease.

Fall Prevention in the Acute Care Setting

Jenna D'Ambrosio

Faculty Mentors: Hannah Zhang, Rose Iannino-Renz

Booth: 57

Track: Community-Engaged Learning

Abstract:

When a patient is admitted to the hospital, often the illness that brought them in can cause them to become weak and struggle with their mobility. Weakness, unsteady gait, and various other factors can lead to falls. Falls in the hospital setting can cause life threatening injuries, emotional distress, and financial burden to the hospital. This research project focuses on the prevention of falls in the inpatient setting, specifically with proper utilization of alarming devices. The evidence-based literature included in this project addresses the causes of falls in the inpatient setting as well as strategies to implement to decrease falls while a patient is in the hospital. In order to address falls, healthcare professionals must take into account the layout of the equipment in the hospital room. The healthcare team must also prioritize proper use and frequent checking of alarming devices, as well as prioritize frequent mobilization in the plan of care of every patient. In connection to the evidence based research, an infographic was created for EP 9-7 at Yale New Haven Hospital that serves as a reminder to activate the patient's alarming devices prior to leaving the room in order to ensure that the devices are able to effectively alert staff if the patient attempts to get out of bed.

The Impact of Improper Patient Education on Medication Therapy

Kieva Conway

Faculty Mentor: Hannah Zhang

Booth: 58

Abstract:

Millions of patients are discharged from the hospital annually with an often confusing list of care instructions, follow-up schedules and new medication regimens. An average of 14% of all patients are unexpectedly readmitted to the hospital within 30 days of discharge, often as a result of a lack of education in the hospital setting (Barrett, 2016). Education for the patient on the use, side effects, dosing and importance of their medications can be overlooked in the rush of discharge due to the high patient turnover rates seen throughout the nation. On the ninth floor of Yale New Haven Hospital, patients are often discharged lacking a thorough understanding of their medication list. The literature in this research project examines the impact of lacking medication education on overall health outcomes and hospital readmission rates. In addition, it proposes a method of improvement through a pop-up screen used on an electronic medical record in order to provide necessary reminders to nurses to educate their patients upon discharge.

The Importance of Maintaining Skin Integrity in Diabetic Patients

Avery Jarboe

Faculty Mentors: Hannah Zhang, Katherine Saracino

Booth: 59

Abstract:

More than 35 million people in the United States battle with managing their diabetes (Diabetes Statistics, 2022). It is an illness that is accompanied by many complications such as heart disease, neuropathy, and in particular, damage to the skin. It is common for diabetic patients to have skin impairments on their feet due to the nerve damage they experience. Furthermore, once skin complications occur, a diabetic is susceptible to delayed wound healing due to hyperglycemia which vasoconstricts and slows blood flow to the site (Spampinato et al., 2020). To combat this issue, a poster was created for patients that can be used both at the bedside as well as at home upon discharge that focuses on education about skin care for this patient population. Significant findings show that there is a direct correlation between dermatology and diabetes, and members of the healthcare team should initiate early assessment and intervention into their plan of care. Interventions such as turning and repositioning, skin assessments per shift, proper nutrition, and more can enhance patient care, safety, and reduce hospital length of stay. Keywords: Delayed wound healing, hyperglycemia, education, assessment.

Enhancing Warfarin Education for Patients Newly Diagnosed with Atrial Fibrillation

Peyton Arone

Faculty Mentor: Jessica Marraffa

Booth: 60

Abstract:

A new diagnosis of atrial fibrillation can cause and increased level of fear and anxiety for patients due to a lack of understanding of the arrythmia and the associated treatments. These fears can be challenging for patients to navigate within the hospital setting while learning about the necessary medications and lifestyle changes associated. The cardiology nurses at Stamford Hospital are using verbalization and repetitive conversations for medication education, however, the anxiety for these patients could be lessened through the use of a visual handout. This tool will guide patients through their new diagnosis of atrial fibrillation and safety precautions to accompany it. There is significant clinical evidence on the effectiveness of Warfarin therapy for atrial fibrillation patients. The evidence-based literature presented in this project addresses the educational need for patients newly diagnosed with atrial fibrillation who are starting Warfarin medication. This project focuses on the need for educational guidance for this patient population as they begin their new path with medication, diet, and lifestyle changes when taking Warfarin.

Benefits of Increasing Incentive Spirometer Education for Surgical Patients

Victoria Young

Faculty Mentors: Jessica Marraffa, Laura Conklin

Booth: 61

This research was also presented at *National Student Nurses Association Conference 2023 71st Annual Convention, Nashville, TN*

Abstract:

The incentive spirometer is used with surgical patients to prevent pulmonary complications and maximize lung capacity. It is standard of practice that patients use an incentive spirometer to prevent atelectasis and pneumonia postoperatively. Patients require education on the proper technique. It was identified that despite verbal education a knowledge deficit is present. A learning tool was created to provide patients with simple instructions. This learning tool is offered in multiple languages (English and Spanish) and provides education in many learning styles. The hand-out provides step-by-step directions on how to use the device along with a QR code that takes the patient to a video demonstrating proper technique. Patients will now have access to instructions at the bedside to encourage the use of the device. Incentive spirometer use will reduce post-operative complications, decrease hospital stays, decrease costs, and improve overall patient outcomes.

The Effectiveness of 2% Chlorhexidine Gluconate (CHG) Bathing Wipes in Reducing Central Line-Associated Bloodstream Infection (CLABSI) Rates Within the Inpatient Population

Lauren Plociak

Faculty Mentor: Jessica Marraffa

Booth: 62

Abstract:

Patients in the hospital with central lines are at an increased risk of infection, ultimately leading to central line-associated bloodstream infections (CLABIs). CLABIs are one of the most common types of hospital acquired infections but the rates can be minimized with daily bathing of 2% Chlorhexidine Gluconate (CHG) wipes. At Stamford Hospital, there is a protocol for daily bathing with CHG wipes in place for patients with central lines. On the 9th floor cardiology unit however, CHG wipes are not being used during bathing for patients who have central lines. Recent research has shown a decrease in CLABSI rates in correlation with the use of CHG wipes with patients with central lines. Additionally, the use of CHG wipes have shown to reduce hospital costs and have led to shorter lengths of stay within the hospital. Evidence has demonstrated that staff and patient education concerning the use and importance of CHG bathing increases compliance, which directly reduces CLABSI rates. While CHG wipes are commonly used in intensive care units, there is a gap in use within general medical surgical units. An infographic was created aimed at the nurses on the unit highlighting the effectiveness of CHG wipes in reducing infection rates. Educating staff on implementing the use of 2% CHG bathing for patients with central lines is crucial in decreasing central line-associated bloodstream infections within the inpatient setting.

The Importance of Heart Health for the Pediatric Population

Mackenzie Donahue

Faculty Mentor: Jessica Marraffa

Booth: 63

Abstract:

The origins of cardiovascular disease begin in early childhood (Perak & Irwin, 2023).There are several modifiable risk factors to prevent these such as maintaining a healthy lifestyle through diet and exercise. While spending time in the Emergency Department at Stamford Hospital, it was noted that a growing population of pediatric patients are using the ED as their primary care because they do not have access to primary care. Without these primary care visits, they may not be receiving adequate information about the importance of maintaining a healthy lifestyle. This project identifies the need for increased access to preventative care regarding cardiovascular diseases in childhood.The results of the data studied throughout this project show that atherosclerosis is present in young children and there is a large population of obese and overweight children (Steinberger et al., 2020). Exercising for one hour a day and maintaining a diet that is high in healthy fats and fiber, and low in unhealthy fats and sodium has beneficial effects of preventing cardiovascular problems by lowering blood pressure, heart rate and cholesterol, and strengthening cardiac muscle (Baschen, 2023). A flyer was created to be posted in patient rooms in the ED and handed out to patients with their discharge paper work. The flyer addresses the issue of an increasing need for education on maintaining a heart healthy lifestyle through bullet points, diagrams containing photos, and QR codes leading to a video for children and an article for parents and adolescents.

Increasing Patient Education on the use of Heparin to Warfarin Bridge

Ashley Sproul

Faculty Mentor: Jessica Marraffa

Booth: 64

Abstract:

Patients are prescribed heparin, an anticoagulant, in the hospital for certain diagnoses, such as atrial fibrillation or pulmonary embolism. Patients who need to continue on a long-term anticoagulant typically will be switched from heparin to another anticoagulant. In the Cardiology Unit in Stamford, there are a number of patients who transition from heparin to warfarin before discharge. Many of these patients need education about heparin to warfarin bridges and why their INR levels need to reach certain parameters prior to discharge. Warfarin is metabolized by each person differently, as a result, each patient reaches the goal INR level at variable rates. This research project examines patient education on anticoagulant bridging. It aims to educate patients about heparin to warfarin bridges and INR level parameters.

Prevention of Hospital-Acquired Delirium

Caroline McConville

Faculty Mentor: Karen Nicolas

Booth: 65

Abstract:

Hospital-acquired delirium is an acute change in mental status that can not be traced back to a preexisting or evolving mental disorder that often results in negative patient outcomes such as inpatient death, increased length of stay, and permanent neurocognitive deficits.On the East Pavilion 7-5 and 7-6 Medical Surgical units at Yale New Haven Hospital, many patients show signs of progressing delirium including alterations in sleep patterns, fluctuating levels of consciousness, disorientation to one's situation, and inattention.This project looks at multiple evidence-based scientific literatures to identify and evaluate the effectiveness of measures taken to prevent delirium in hospitalized patients.Significant discoveries of these studies mention the success of early ambulation, natural light exposure,orientation practices, and sleep promotion in decreasing the occurrence of delirium in acute care settings.Implementation of these findings is necessary for the improvement of patients' health status.A checklist was created to be hung in patient rooms to remind RNs and PCAs of necessary measures that must be taken.

The Importance of Hand Hygiene Education

Kailyn Montilla

Faculty Mentors: Karen Nicolas, Rose Iannino-Renz

Booth: 66

Abstract:

Hand hygiene is an essential practice for preventing the spread of infection in healthcare settings. Nurses play a crucial role in promoting hand hygiene and reducing the risk of healthcare-associated infections. Proper hand hygiene education for nurses is essential to ensure that they understand the importance of hand hygiene, know when and how to perform it, and are aware of the consequences of not adhering to hand hygiene guidelines. Evidence-based literature concludes that hand hygiene education improves compliance amongst nurses. Nurses who receive adequate hand hygiene education are more likely to comply with hand hygiene guidelines and to promote hand hygiene practices among their patients and colleagues. Therefore, hand hygiene education for nurses should be a priority in healthcare settings to improve patient safety and reduce the spread of infectious diseases.

Fall Prevention Education for Patients

Shannon Hayden

Faculty Mentor: Karen Nicolas

Booth: 67

Abstract:

When a patient gets admitted to the hospital, there is a greater chance that they may be at risk for falls. Upon admission into the hospital, patients increase their risk due to their diagnoses, medication regimen, immobility, and diet. On the East Pavilion 7-5 and 7-6 at Yale New Haven Hospital, it is apparent that patients do not understand how to prevent falls. Patients have a deficient knowledge on why they are a fall risk and what preventative measures to take to decrease their chances of falling. This research project focuses on the importance of educating patients on how to prevent falls upon admission. Studies have shown that educating patients about how to prevent falls increased their understanding of what to do in both inpatient and outpatient settings to decrease their risk. Upon admission patients receive a handout that discuss what being labeled as a fall risk means. The handout educates patients about the importance of bed alarms, continuing to perform daily exercises both in and out of bed, and understanding how their diagnosis or medications may put them at a higher risk for falls. Overall, this handout is effective in giving patients the knowledge to understand how they can decrease their chances of falling by using preemptive measures.

Guideline for New Nurses to Asses IV Compatibility

Molly MacLellan

Faculty Mentor: Karen Nicolas

Booth: 68

Abstract:

Medication errors by nurses when administering intravenous medications can be extremely detrimental to the patient and even fatal due to the fast-acting nature of delivering medications through the IV route. On East Pavilion 7-5 and 7-6 medical surgical units at Yale New Haven hospital almost every patient has IV access and many have either an IV fluid, IV medication or both running. My first day on the unit I noticed my patient had an IV fluid and IV antibiotic running, and when hanging a fresh bag of antibiotic medication it came to the attention of my preceptor and I that the two were not compatible. After further research studies showed that 41% of all IV administration errors were due to incompatibility. (Vijayakumar 2014)The evidence based research presented in this project provides relevant information for nurses on resources and methods that can be used to avoid these IV medication errors. Providing nurses, especially new nurses with the resources to be successful and confident in their practice not only improves patient outcomes but also retention rates (Phillips et al., 2014). In connection with this research a useful and sensible tool was developed in the form of a 4 step instruction card nurses can attach to their Identification badge that will guide them on verifying IV medication compatibility.

Long-Term Psychological Care After Perinatal Loss

Reese Grinnell

Faculty Mentor: Katherine Dalton

Booth: 69

Abstract:

When people think of care in the hospital they instinctively think of care for the physical well-being of patients, many do not consider the importance of care surrounding the mental well-being of patients. Mental health is often overlooked because it does not usually present in ways that physical symptoms do. This is especially true amongst the population of patients who have experienced perinatal loss. Psychological care for patients who have experienced perinatal loss is often overlooked by healthcare workers because the patient is physically healthy. Women who have lost their unborn child are often sent home with no long-term follow up being performed or planned for by the hospital. However, the long-term effects of perinatal loss and complicated grief are not well-known in the healthcare community - leaving patients to navigate the difficult situation on their own. Evidence-based research showed that providing long-term psychological support to mothers and fathers experiencing this loss can greatly decrease the negative mental health consequences and increase effective coping skills. This care can also positively impact subsequent pregnancies. This research project focuses on the importance of long-term psychological support for families who have experienced perinatal loss and provides nurses with a guideline to specialize their care for this population of patients.

Validating Life and Loss: Nursing Support for Bereaved Parents

Emma Shaw

Faculty Mentor: Katherine Dalton

Booth: 70

Abstract:

Infant loss is an emotionally draining and often traumatizing event for both the parents or families who experience it and their healthcare providers. The maternity unit at Greenwich Hospital only has a few nurses who are further educated on bereavement care. There is a desire to spread this knowledge and practice amongst all of the maternal health staff, but it is not clear how best to address this topic. In the U.S., the infant mortality rate is 5.4 deaths per 1,000 births, and the rate of infants who are stillborn is 1 in 175 births (CDC, 2022). Parents who lose an infant experience intense grief, yet they do not always receive the support they deserve because infant loss is still a taboo subject in society. While this topic is difficult to discuss because of the emotions and fears it elicits, there are ways in which the healthcare providers and community can support the bereaved parents that need to be further examined. An important aspect of bereavement care is the validation of their roles as parents and acknowledging the reality of their loss. The evidence-based literature in this project reveals that patients' experiences with bereavement are heavily persuaded by the care and support, or lack thereof, that they receive from healthcare professionals. Furthermore, the evidence-based literature demonstrates how nurses and other healthcare providers can facilitate a bond between the parents and their infant by creating mementos, allowing time and contact with the infant, and providing emotional support and validation. These memories and experiences as parents can decrease the risk of complicated grief as their journey with grief continues after discharge (Camacho Ávila et al., 2020).A QR code linked to learning material was created in connection to this research as an educational tool for healthcare providers on appropriate bereavement care practices, so that providers can improve the patient experiences of bereaved parents and aid in their journey with loss and grief.

Identifying Signs & Symptoms of Perinatal Mood Disorders

Diana Raifstanger

Faculty Mentor: Katherine Dalton

Booth: 71

Abstract:

Perinatal mood disorders are a common occurrence amongst pregnant and postpartum women. Left untreated, they can increase in severity, leading to reduced bonding between mother and baby, and even psychiatric emergencies. After reviewing literature related to the signs and symptoms of these mood disorders including how they can be screened for and treated, it was found that there are a multitude of ways to prevent them and facilitate early treatment. Screening for postpartum depression both during and after pregnancy is a clear step toward increasing awareness of perinatal mood disorders and preventing adverse incomes for pregnant as well as postpartum women. By screening for and addressing issues related to mental health literacy, new parents have more opportunities to minimize risks to themselves as well as their children. Additionally, increasing awareness may reduce the stigma and shame surrounding mental health problems for new mothers as well as their support systems and can increase help-seeking behavior, an essential for early treatment. The identification of risk factors for perinatal mood disorders amongst pregnant and postpartum women has the potential to reduce immediate and long term complications for this population in relation to their mental, and physical well-being. This research emphasizes the importance of educating patients about these symptoms, and assessing their knowledge, to ensure they are able to recognize signs early and seek appropriate treatment.

Antepartum Mental Health and its Link to Postpartum Depression

Kiera Neal

Faculty Mentor: Katherine Dalton

Booth: 72

Track: Community-Engaged Learning

Abstract:

After childbirth, many women experience postpartum depression. Postpartum depression is defined by feelings of worthlessness, irritability, alterations in sleep and eating patterns, and difficulty bonding with their newborn. While common perception is that these symptoms only appear in the postpartum period, the onset of these symptoms often occurs earlier in pregnancy. At Greenwich Hospital, women are screened for symptoms of postpartum depression using the Edinburgh Postnatal Depression Scale (EPDS) while recovering from labor in the Postpartum unit. Even though antenatal depression is a significant risk factor for developing postpartum depression, it is not standard in the United States for screenings to be conducted prior to the birth of the child. In addition, pregnant and postpartum women with depression report feeling judged when discussing their symptoms with healthcare professionals. Many professionals lack adequate mental health training to detect and manage these psychiatric symptoms. This research project examines the importance of early detection and intervention by frequently conducting comprehensive depression screenings throughout the entire perinatal period and providing proper psychiatric training to healthcare professionals. Findings indicate that antenatal interventions including the use of Cognitive Behavioral Therapy and Peer Support Workers, as well as promoting awareness and education to patients and nurses help prevent or lessen the severity of postpartum depression. Key words: postpartum depression, antenatal depression, perinatal, EPDS, risk factors

Relaxation Strategies and the Benefits They Can Offer for Labor Pain Management

Johanna Casey

Faculty Mentor: Katherine Dalton

Booth: 73

Abstract:

Managing a patient's pain during their hospitalization is an important goal of patient care, and it has a major effect on the patient's experience. This is especially true for women in labor; many women experience the worst pain of their life during the process of labor and delivery. There are a variety of ways to control this pain, with neuraxial pain control methods such as epidurals being one of the most popular. However, certain side effects of these traditional methods of pain control can make them undesirable to patients. For patients in labor who would like alternatives for controlling their pain, non-pharmacological pain control methods should be made available and accessible. One branch of non-pharmacological pain management that has the potential to decrease pain in laboring women is the use of relaxation strategies such as yoga, meditation, and guided imagery. This research project examines 8 studies to evaluate the benefit of yoga, meditation, and guided imagery as pain control methods in comparison to traditional methods of pain control. Key words: labor pain, pain control, non-pharmacological pain management, yoga, meditation, guided imagery

The Importance of Educating Peri-operative RN's on Fire Prevention to Increase Patient Safety

Laina Campos

Faculty Mentors: Katherine Saracino, Mary Kobel Lamonte

Booth: 74

Abstract:

This project focuses primarily on educating peri-operative nurses on fire prevention as a way to increase patient safety in the operating room. Although surgical fires are rare, they are a serious event that could occur in the surgical setting and is often overlooked. Once peri-operative nurses are familiar with their role in fire prevention and management, there is a decreased chance for surgical fire to occur. The evidence-based literature included in this project addresses the fire triangle, the fire risks of antiseptic prep solution, and the benefit of conducting a successful fire drill. Furthermore, the evidence-based research explains how peri-operative nurses should be aware of the locations of fire alarms and extinguishers, evacuation protocols in their respective facility, and potential fire risks based on the set-up of the operating room. Along with the literature review,an infograph was created created based on fire safety protocols that peri-operative nurses can use to increase awareness on fire prevention and ensure patient safety.

Handoff Sheets for New Graduates and Nursing Students

Savannah Haims

Faculty Mentors: Katherine Saracino, Christina Vermes-DeStefano

Booth: 75

Abstract:

For many new graduate nurses, handoff has been identified as a shortcoming in their nursing practice. New graduates may admit to feelings of anxiety or a lack of self-confidence when delivering change of shift reports. In addition, seasoned nurses find that new graduate nurses give a less adequate patient report. It is important for nurses to give an efficient report on their patients. Efficient patient handoff directly impacts patient outcomes and patient care trajectories (Lillibridge 2017). This is rationale as to why new graduate RNs require extra support in order to assure safe patient care. This issue has been clearly stated by multiple new graduate nurses on YNHH 6-4 SP Surgical/Trauma floor. Through interviews they outlined three major barriers to handoff including: confidence, peer interruption, and organization. A handoff sheets, based off of the literature, was created for new graduate nurses to utilize. As the evidence-based literature revealed,“Standardized tools are thought to reduce loss of information and improve handoff quality, enhancing patient safety and quality of care”(Rhudy, 2022). Patient handoff is a skill that will be utilized twice a shift when receiving and delivering reports. This process assists nurses in organizing their shifts and prioritizing care. This tool, which will support the nurses to deliver proper handoff, will benefit nurses, patients and staff in providing the safest patient care possible.

The Importance of Standardized Tracheostomy Care Protocols for Nurses

Colleen Quinn

Faculty Mentor: Katherine Saracino

Booth: 76

Abstract:

Tracheostomy care is a very important skill for registered nurses to understand and perform with proficiency. However, a lack of confidence with this skill can easily affect patient care due to inexperience. New graduate nurses may be a vulnerable population, as they may not have gotten sufficient opportunity to practice performing this skill while in school. There can also be non-uniformity in how healthcare providers perform tracheostomy care which poses risks for conditions such as mucus plugs, infections, and extended hospital stays. These potential problems can cause additional concern to the already stressful nursing career of a new nurse.A standardized written protocol that can support the new staff will help alleviate inconsistencies and decrease risk of patient injury. On a medical unit in a local urban hospital, tracheostomies are a staple for many patients. Nurses must be competent to care for these patients. With new graduate nurses, thisskill that may vary in competence and protocol, creating a potential for mistakesand decreased patient outcomes. With specific tracheostomy care protocols, there has been a “clinically meaningful reduction” in respiratory emergencies (Masood et al., 2018). A tracheostomy care checklist was created with organized steps to be made into a convenient badge card for nurses to improve overall patient outcomes and support nursing education.

The Use of Glucose Gel to Prevent Asymptomatic Hypoglycemic Infants from NICU Admissions

Ashley Cyr

Faculty Mentors: Katherine Saracino, Stephanie Caicedo

Booth: 77

Abstract:

In the neonatal population, hypoglycemia is the most common metabolic disturbance due to birth defects, endocrine disorders, poor maternal intake, inadequate feeding within the first 24 hours of birth, and non-compatible blood types. Nationally, there has been an increase in NICU hospitalization from hypoglycemia within the first few days of an infant's life. At Bridgeport Hospital at the Women's Care Center, it was identified by preceptor and staff members that the use of sublingual glucose gel (dextrose and water, along with small amounts of other compounds) was the best early prevention method to prevent hypoglycemic infants from being admitted to the NICU. For Bridgeport Hospital, the use of glucose gel prevented asymptomatic infants from becoming symptomatic, as well as avoiding invasive IV therapy. Oral glucose gel (aka dextrose gel) is a non-invasive and inexpensive treatment that hospitals can use to prevent NICU hospitalizations in babies below the glucose threshold. Significant findings of this early implementation, along with feeds, can reduce the need for IV fluids, promote breastfeeding, and limit separation from mother-infant bonding. (Hamdan 2022). By following early prevention protocols, nurses can encourage the use of oral glucose gel to provide lifesaving treatment for asymptomatic hypoglycemic infants.Keywords include hypoglycemia, oral dextrose gel, asymptomatic, NICU admissions, and preventative measures.

The Importance of Education for Pediatric Patients and Parents Before MRI Urography

Anya Levine

Faculty Mentor: Katherine Saracino

Booth: 78

Abstract:

When families come to the hospital with their child for a procedure, they both can experience anxiety. There can be feelings of helplessness, nervousness, and being overwhelmed.Education given to the parents and children can address common concerns, questions, and fears of the urography procedure. The nursing staff at CCMC identified the need to provide information prior to procedures, so patients, parents and guardians have time to understand the material. Increased knowledge and comfort with the protocol will improve the overall flow of the procedure and increase patient/family satisfaction. This project reviewed evidenced-based practice, protocols and best practice guidelines to create an infographic to be used in the radiology dept.

Benefits of Bed Alarms in Promoting Patient Safety

Kelly Smith

Faculty Mentor: Katherine Saracino

Booth: 79

Abstract:

Patients, especially those with dementia and other cognitive impairments, may try to exit their beds without assistance from clinical personnel. These situation may cause patients who are confused to fall and suffer injuries. A large number of patients on Yale 9-5 suffer from dementia and physical disabilities that deem the patients as at high risk for falls. Bed alarms, including bed exit alarms and motion sensors, and other fall-risk measures play a critical role in alerting nursing staff when patients try to ambulate unassisted. After observing patient and visitor behavior on this unit, it was identified that educating patients and their family members on the use of bed alarms could help prevent anxiety and confusion regarding unknown noises.Patients may refuse bed alarms but further education could promote proper use. This project examines studies that explore the use of bed alarms as a fall prevention measure. After reviewing literature, findings indicate that bed alarms and sensor monitors reduce patient falls, lead to less restraint use, and alert staff to patient needs in a quicker manner. Use of an infographic that promotes bed alarm use and understanding would be beneficial in creating a safer environment for patients.

Non-Pharmacological Pain Management in Pediatrics Patients under Three Years of Age

Elisabeth Kinsella

Faculty Mentor: Katherine Saracino

Booth: 80

Abstract:

Pediatric pain in children under the age of three, which is often underreported and untreated, can contribute to negative consequences during growth and development. On the MS6 unit at Connecticut Children's Medical Center, pediatric patients of all ages are exposed to various painful stimuli throughout the day, due to disease processes and required procedures. Many patients, their families, as well as members of the interdisciplinary team, believe that pharmacological methods are the only options for pain management. There is a lack of understanding regarding non-pharmacological interventions that can be effective at the bedside to reduce pain. This project reviews several studies looking at varied settings/situations and levels of evidence. Significant findings include that educating nurses may lead to stronger advocacy for addressing immediate action toward pediatric pain. Non-pharmacological methods, such as non-nutritive sucking, kangaroo care, distraction, and tactile comfort, can provide analgesic effects and increases pain tolerance.

Education to Reduce Non-Urgent Pediatric Emergency Visits

Jenna Ranney

Faculty Mentor: Katherine Saracino

Booth: 81

Abstract:

In times of illness or injury, a parent's primary concern is securing the best care for their child, often seeking emergency care even in situations when such urgency is not necessary. A significant proportion of all emergency department (ED) visits are deemed non-urgent and could be better treated in other settings. At Greenwich Hospital, many parents were observed bringing children into the ED to receive acute, urgent care for non-urgent illnesses and injuries. In most cases, parents of pediatric patients demonstrate a lack of sufficient knowledge regarding their child's illness or injury and the resources available to them. Without proper understanding of the cause, urgency, and necessary treatments for their child's problem, they opt for emergency care out of an abundance of caution. For non-urgent cases, the ED involves longer wait times, poorer outcomes, higher costs, strained healthcare resources, and a lack of continuous long-term care when compared with primary care settings. Parents require education that will help them understand what urgent issues need critical treatment in the ED and what problems can be brought to primary care settings where they will receive more effective, higher quality, and less costly care. An infographic was created to provide easy-to-understand, comprehensive, and quickly accessible information regarding the most common illnesses and injuries among pediatric patients. Having this information at their fingertips will empower parents with the knowledge needed to make the best choice for their child's care.

Transitioning Nursing Handoff to the Patient Bedside

Caroline McAndrew

Faculty Mentors: Katherine Saracino, Michele Lecardo

Booth: 82

Track: Community-Engaged Learning

Abstract:

Reliable and up-to-date communication is vital for safe patient care. The SBAR nursing handoff was implemented to promote consistency between handoffs and reduce communication errors. Reliability and patient safety improves with the use of a standardized reporting method, as well as active patient involvement. On Norwalk Hospital's 6 West general medicine floor, change of shift report is observed being relayed by staff RNs at the nurses' station or in the hallway, but rarely at the patient bedside. Often, updates are conveyed verbally and the oncoming nurse does not visualize the patient, offering room for worsening condition between report and first assessment. The evidenced based literature presented in this project confirms that transitioning nursing handoff to the patient bedside increases nurses' accountability by visualizing the patient and exchanging information in the current environment of care. It also promotes patient and family participation in care, increases patient and nurse satisfaction through introductions and closed loop communication, and facilitates early assessment thus reducing safety risks and nursing overtime. In connection with the research, a new SBAR handoff report sheet was created for unit nurses to use that includes a 3-step checklist ensuring patient visualization by the oncoming nurse, the introduction of the oncoming nurse, and addressing any patient concerns before change of shift occurs.

The Importance of Patient Education on Proper Blood Glucose Control to Prevent Complications of Type 2 Diabetes

Maeve Foley

Faculty Mentor: Katherine Saracino

Booth: 83

This research was also presented at *National Student Nurses Association Conference 2023 71st Annual Convention, Nashville, TN*

Abstract:

This capstone project summarizes the educational plan and resources utilized by nurses to educate clients with newly diagnosed Type II Diabetes Mellitus (T2DM). The goal of nurse-led education is to communicate the evidence-based methods for proper glucose control.Observations during clinical shifts at a local hospital's Neurology/Orthopedic/Urology unit revealed a significant population of clients with the comorbidity of T2DM.The literature on the prevalence of T2DM supported personal clinical observations. The literature on T2DM care clearly outlines disease management at an appropriate literacy level for nurses. However, resources available for lower health literacy levels are more challenging to identify within online searches. There is an opportunity for nurse-led education to clients that require proper glucose control to prevent physical complications of T2DM. This capstone project reflects highlights of updated and understandable information to guide nurse-led diabetes management education to clients with T2DM. Implementing use of an evidence-based standard guide by nurses to educate clients on diabetes management will provide support and motivation to those that need to manage their daily blood sugar, reduce risk of developing complications, improve health outcomes, and save healthcare dollars.

Diet Education for Those with Loved Ones Undergoing Chemotherapy

Kieran McAllister

Faculty Mentor: Katherine Saracino

Booth: 84

Abstract:

Cancer anorexia, cachexia, and malnutrition are major issues that families of cancer patients must deal with on a daily basis. These nutritional concerns affect their loved one's ability to function, quality of life, and at times can have a negative effect on their prognosis. Caregivers end up trying to force food on their loved ones without recognizing that taste buds have been altered by the chemotherapy, changing the overall taste of food, and causing nausea. It was noted in a large urban hospital that caregivers were experiencing burnout at mealtime. The purpose of this project was to educate families on the importance not only of adequate nutrition for their loved ones, but also with the foods they are consuming. Findings have shown that smaller high protein and calorie snacks throughout the day rather than large meals are more satiable to cancer patients and reduce the side effects that are often associated with chemotherapy. In order to keep mealtime as a positive experience, an educational infographic can be distributed to the caregiver to share information to reduce burnout and describe patient experiences.

Benefits of Patient Education on Home Management of Congestive Heart Failure Symptoms

Abigail Linzer

Faculty Mentor: Katherine Saracino

Booth: 85

Abstract:

When a patient is diagnosed with a chronic lifelong diagnosis in the hospital instantly their minds race at a thousand miles an hour. There are over 5 million people that have been diagnosed in the United States with congestive heart failure, and it is the most common chronic condition in geriatric patients (Roberts. 2023). However, CHF can be easily managed with the right education. In most cases CHF can be managed with outpatient appointments and providers (Ding, 2020). Patients have a lack of knowledge when it comes to checking symptoms. Patients are unaware at times of symptom changes that may be related to their CHF. Education is being crammed in when a patient is being discharged. Instead, teaching and education should be integrated from the start of their admission. Nurses and providers have studied this information but it is completely brand new to our patients. Information about CHF is common knowledge to a certified cardiology nurse but completely foreign to a newly diagnosed CHF patient. There are significant findings that suggest that daily symptom management in forms like: flyers, apps, and telemedicine can decrease the need to go to the hospital to be admitted (Santesmases-Masana et al., 2019). There is limited time in the day for healthcare workers to provide education, especially when you are in nursing. As acuity in our patients continues to grow, nurses have less and less time in their days. Creating educational tools like a simple daily management symptom flyer will help the nurse organize how they will discharge the patient. This will also allow for not as much information to be thrown at the patient and create a better learning environment. In conclusion, with the flyer I created there is potential to lower admission rates so our patients have the best quality of care.

The Nursing Shortage: Empowering Nurses to Take Political Action

Christina Caruso

Faculty Mentors: Katherine Saracino, Michele Lecardo

Booth: 86

Track: Community-Engaged Learning

Abstract:

As the national shortage of nurses continues to bring issues across America, nurses that remain at the bedside are suffering from the effects. Often, their shifts are short on staff causing them to take on heavier patient assignments and work overtime. On various hospital units, the consequences of short staffing can be seen in the tired eyes and daily stress of the nurses working there. As an unintentional result, patient safety and quality of care can be compromised. There have been multiple initiatives across the states to implement laws concerning safe staffing in hospitals with California being the only current state with mandated staffing ratios. This research project examines the literature on how high nurse-patient ratios affects how nurses give care as well as how it affects their own well-being. This project also looks at the political initiatives and actions that nurses can individually take to have a voice and make a difference for their profession. Significant findings indicate a direct relationship between the stress levels of overworked nurses and poorer patient outcomes. There continues to be a need for solutions to the staffing shortage and it is becoming more urgent than ever before as nurses continue to work in unsafe staffing conditions.

The Benefit of Early Intervention for the Surge of Respiratory Illness in the Pediatric Population

Katherine Conlin

Faculty Mentors: Katherine Saracino, Andressa Goncalves

Booth: 87

Track: Community-Engaged Learning

Abstract:

The pediatric population has experienced a significant surge in respiratory illness since the COVID-19 pandemic restrictions were lifted. According to the CDC, acute bronchiolitis due to Respiratory Syncytial Virus (RSV) has become the leading cause of hospitalization among children under the age of one, with 97% of children becoming infected before age two (CDC, 2022). Now that the population is in closer contact after the pandemic, these children are being exposed to multiple viruses simultaneously, increasing the overall severity of their symptoms (Krewson, 2022). On the Pediatric Short Stay unit of Yale New Haven Hospital, many patients presented with increased work of breathing and difficulty perfusing oxygen throughout the body. This was manifested with symptoms such as belly breathing, nasal flaring, head bobbing, intercostal retractions, tracheal tugging, and the use of accessory muscles, all indicating respiratory distress. The patients required more invasive medical interventions such as high-flow oxygen, intubation, or insertion of a nasogastric tube due to difficulty feeding. Feeding around the clock is critical to prevent dehydration and electrolyte imbalances, which can eventually result in more serious and potentially fatal issues. To prevent these severe symptoms and quick deterioration, an infographic has been created to educate nurses about the rise of pediatric respiratory illness and the importance of early intervention with supportive treatment therapies.

The Role of Early Intervention by Child Life Specialists in Providing Quality Pediatric Care

Claire Santa

Faculty Mentor: Katherine Saracino

Booth: 88

Abstract:

When a child must enter a hospital or pediatric medical setting, both the patient and their families experience a variety of thoughts, feelings, and changes in their daily routine. Emotions associated with the experience of the hospitalization or medical treatment may play a role in determining how a patient views medical care, their emotional development, and the efficacy of their treatment.These factors can impacting the rate with which a patient returns to an appropriate state of health. On the Medical Surgical floor at Connecticut Children's Medical Center, the Child Life Specialists work with the nursing staff to create a positive experience for all hospitalized patients and their families. The Child Life Specialists utilize developmentally appropriate medical, normative, or therapeutic play, taking into account all individual, familial, and medical or environmental factors, in order to create a supportive environment. Despite the beneficial impact that Child Life Specialists have on a patient's plan of care, awareness regarding the role of CLS was limited, thus impacting the rate with which they may intervene. This project examines the influence that CLS have on providing quality care, thus changing the ways with which both children and their families view treatment, ultimately impacting the efficacy of care provided by the nursing staff. There continues to be a need for more research regarding the effect that early intervention by Child Life Specialists may have on assisting nurses to provide quality pediatric care.

Educating Nurses on Communication Skills Used to Care for Developmentally Disabled Children

Natalie Nolan

Faculty Mentor: Katherine Saracino

Booth: 89

Abstract:

Nursing school educates pediatric nurses to care for children based on their chronological age, but does not always consider how to care for children who are not meeting cognitive developmental milestones. While working on a pediatric short stay unit at Yale New Haven Hospital many of the patients had developmental disabilities. The nurses had to learn how to navigate communication with both patients and their parents. Most developmentally disabled patients on the unit were school-aged children who were nonverbal and needed a personalized care plan different from a non-disabled child. Many nurses stated that they lacked the time, education, and resources to properly adjust the care for these children. The literature review completed for this project emphasizes the importance of involving parents in the care of this pediatric population to gain an understanding of the habits and functional abilities of the patients. With the help of the parents and education, the nurses on this unit will be able to communicate care to these patients more effectively. Using an infographic to educate the nurses on communication tactics that should and should not use when treating these patients will allow personalized and holistic care for this unique population.

Let's Talk About Codes

Corrin Motyka

Faculty Mentor: Katherine Saracino

Booth: 90

Track: Community-Engaged Learning

Abstract:

When a patient is admitted to the hospital in critical condition, it is often too late for that individual to make decisions regarding what resuscitation procedures, if any, they would want performed. Even if they are able to make a decision, they are asked to do so in a highly stressful situation. Often, these patients are not fully knowledgeable about the different code statuses they can choose. A decision such as this one should not be made abruptly. Research shows the majority of people misunderstand what “all resuscitation measures” mean, and therefore cannot make an informed decision regarding their care. There are also many barriers to code status discussions. Providers are not properly educated themselves and are uncomfortable discussing the topic with patients. This project focuses on educating providers on the importance of discussing code options and outcomes with their patients in the primary care setting when patients have time to make these critical decisions.

The Importance of Lovenox Adherence for VTE Prevention in High-risk Patients

Laura Chinian

Faculty Mentor: Kathy Saracino

Booth: 91

Abstract:

Medication refusal can be a common issue in the hospital setting. This can be dangerous for patients depending on the medication and the need. Lovenox (Enoxaparin) is a crucial anticoagulation medication that can be life saving for patients with high venous thromboembolism (VTE) risks. The condition of VTE encompasses deep vein thrombosis (DVT) and pulmonary embolism (PE) and is ranked third among the most common cardiovascular diseases. It is a worldwide major healthcare problem due to its high incidence, significant mortality rate from PE, high recurrence rate of up to 30% at 10 years, and high morbidity through long-term complications. On 6 North, a cardiac floor at St. Vincent's Medical Center, many of the patients are classified as VTE high risk, yet do not receive their prescribed Lovenox due to patient refusal. The most commonly documented reason nationally for missed doses of VTE prophylaxis is patient refusal, accounting for 39% of missed doses. Lovenox has been shown to be very successful in high-risk cardiovascular patients for VTE prevention. This project aims to present scientific literature that highlights the danger of VTE and the importance and safety of Lovenox for VTE prevention. Refusal of Lovenox is highlighted and how it impacts patient health.An infographic has been created for patient education. This education will be lasting and can assist patients to make informed decisions on taking their medications as prescribed.

Benefits To Standardized Newborn Feeding Chart For Postpartum Patients

Katherine Levangie

Faculty Mentor: Kathy Saracino

Booth: 92

Abstract:

New mothers tend to need a large amount of education in order tokeep their newborns well-nourished during the initial days following birth. In the hospital, patients are encouraged to feed their newborns at least every 2-4 hours or more depending on the baby's needs, and to then record the times and inform the nurse of the time of the feed, how long, and how much if the baby was given formula (Centers for Disease Control and Prevention, 2022). Monitoring this information can be overwhelming to new mother and difficult to document for the nursing staff.The nurses on the Greenwich Hospital Maternity floor, typically ask patients to record these feedings on the white board in their room, or to inform the nurse when they come back to provide care. This practice can lead to incomplete or forgotten details by the mothers. Creating a standardized sheet for patients to fill out this information could greatly benefit both the nurse and patient in relaying information. Having a standard form with boxes to fill out such as the time, duration, amount, skin to skin, wet and dirty diapers, and type of feed (breast milk or formula), could be very beneficial for nurses to document the infant's nutrition and less overwhelming for the patients.

The Importance of Fall Prevention Education for Post-Operative Patients

Anne Sullivan

Faculty Mentor: Kathy Saracino

Booth: 93

Abstract:

When a post-operative patient begins to ambulate, they can be at risk for a fall. The danger of patient falls increases in early post-operative patients due to weakness/medications/ pain.Falls can lead to both minor and severe complications. Injuries sustained can lead to longer hospital stays and expensive medical bills. These situations cause critical issues for both the patient as well as hospital administration. On a medical/surgical trauma unit in a large urban hospital, the 6-4 Medical Surgical Trauma Unit at Yale-New Haven Hospital, patients and families have limited knowledge about fall prevention strategies. The evidence-based literature review included in this project addresses the positive patient outcomes associated with fall prevention education.These outcomes include reducing patient falls, fewer injuries, and reducing medical costs. Furthermore, the literature supportsthe importance of using an educational handout tool to educate both nursing staff and patients on fall prevention. A handout on fall prevention was created to address decreasing falls on this hospital unit. This project examined multiple studies evaluating multiple approaches to patient education on fall prevention as well as the outcomes. This education allows for patients to fully understand fall risk factors and how to prevent them from occurring.

Gastrointestinal Problems in Autistic Children under 18 Years of Age

Georgia Little

Faculty Mentor: Kathy Saracino

Booth: 94

Abstract:

Patients with autism are often not aware of the common gastrointestinal (GI) tract problem that can occur with this medical diagnosis. Not only can GI problems cause discomfort and pain, but they are also linked to increases in autism-related behaviors. The project was developed by noting a prevalence of GI complications in patients with Autism on the 7-3 Yale New Haven pediatric floor. The evidence-based research showed that autistic patients who have better controlled gastrointestinal tract issues have a decrease in autism-related behavior. An additional study shows that with the transfer of commensal microbes from a healthy donor via fecal microbiota transplant, and added additional antibiotics, bowel cleanse, and stomach acid suppressants, Autism-related symptoms were decreased as well as noted improvement of GI tract function.A pamphlet was developed to provide education to the unit's patients and their parents in order to provide education about gastrointestinal problems in Autistic children.

Epidural Education For the Laboring Mother: A Nursing Checklist

Kaila Pryor

Faculty Mentor: Kathy Saracino

Booth: 95

Abstract:

Aim: Patient education plays a foundational role in keeping patients safe and continuously healthy. While in a crisis or anxious state, it may be difficult for the patient to retain essential education. Specifically for mothers during labor, this project looked to create a checklist for nurses on how to best educate their patients when receiving an epidural. Methodology: This review uses 5 studies ranging from readability of anesthesia education material to position changes while in labor were reviewed, all to gain perspective on the best way to educate a patient receiving an epidural. The overall goal was how to besteducate the patients to maintain safety for both the mother and fetus. Results: Significant findings identified included: maternal position changes with a peanut ball can increase labor progress and decreases chances of a C-section, epidural use by the mother does not change a baby's APGAR score, and if women receive education on an epidural, they are more likely to receive one. Conclusion: After examining the research, a checklist was made on the crucial information patients need after receiving an epidural in order to promote safety and reduce anxiety.

Implementing Bedside Report in a Surgical ICU

Megan Rachek

Faculty Mentor: Kathy Saracino

Booth: 96

Abstract:

This teaching project focuses on implementing nursing bedside reports, in the Surgical Intensive Care Units (SICU). Medication errors are the third leading cause of death, making up nearly 80 percent of lawsuits in the United States. (Martini & Resek, 2021) With bedside reporting, the incidence of medication errors, falls, and injuries drastically decrease. Evidence-based practice and research surrounding bedside reporting in the acute care setting have proven that it effectively diminishes the risks of sentinel events and allows for a more patient-centered approach to care. Patients can set short and long-term goals with the patients at the start of the shift while also allowing patients to voice any concerns regarding their treatment. Nurses can complete a general baseline patient assessment at the beginning of their shift which will allow for opportunity to note changes in patient health status throughout the shift. Delays in treatment can be decreased, and patients feel they are at the forefront of their treatment. Evidence-based practice supported the development of a report sheet to provide the nurses at Greenwich Hospital. This tool provided an organized structure to complete reports at the bedside in a time-efficient manner. The chart ensures that nurses are completing sufficient reports and visually assessing their patients at the beginning of each shift. It also allows nurses to hold each other accountable and promote teamwork throughout the unit, optimizing the quality of care patients receive throughout their time in the intensive care unit.

Importance of Nurse Education on Heart Failure Discharges to Prevent Hospital Readmissions Within 30 Days

Shannon Weaver

Faculty Mentor: Kathy Saracino

Booth: 97

Abstract:

When patients are discharged from the hospital with a chronic illness such as congestive heart failure, there are many causes that results in patients being readmitted within 30 days. Chronic illnesses are challenging to manage with other co-morbidities and the education required can be overwhelming. Upon admission into an acute care center, the discharge process is initiated, which includes patient education. Nurses may find it challenging to have adequate time to provide education as well as obtaining education resources that are effective for patient education. Heart failure readmissions and treatment costs are exorbitantly high in the United States. This project examines five research articles discussing the effectiveness of nurse education to prevent heart failure readmissions. Significant findings demonstrate that using education sessions on heart failure management, followed by a teach-back method can be an effective way to prevent readmissions within 30 days. More research is needed on effective ways to safely discharge patients and provide them the resources to manage their heart failure outside of the hospital.

The Importance of Huddles Among Nurses

Emma Widman

Faculty Mentor: Kathy Saracino

Booth: 99

Abstract:

It is essential to deliver coordinated communication and high-quality health care to patients in the hospital setting in order to achieve best patient outcomes.The implementation of huddles between caregivers before providing patient care has proven effective. AHRQ recommends huddles should be held on a regular basis although, in practice, the format may only be held as-needed or if there is time.Brief huddles, typically a duration of 10-15 minutes, provides efficient information exchange and participant engagement. Huddles are necessary to give healthcare providers the opportunity to hear and learn about the patient prior to providing care.Nursing huddles are a great way to share patient information that promotes patient safety and wellbeing as well as decrease errors.Nurses should provide the situation of the patient's status and hospitalization, background of the patient's health, assessment from the nurse' shift and recommendations for the nursing taking over. Using this effective communication in nursing huddles, nurses gain a better understanding of the patient status and have updates on their health condition and hospitalization.

A Scoping Review of the Mental Health Challenges Encountered by Immigrant Pediatric Patients

Katherine Tenemaza Rojas

Faculty Mentor: Linda Roney

Booth: 100

This research was also presented at *Eastern Nursing Research Society, Society of Pediatric Nurses*

This research was supported by the Corrigan Scholars Fund

Abstract:

Immigration is leading the United States population growth. Emigration can lead to mental and behavioral health (MBH) consequences for children and families. Despite the healthy immigrant paradox, immigrant children are at higher risk of MBH issues than their non-immigrant counterparts. Early identification and prompt care can prevent further psychological problems. Mental health disorders can arise in children due to exposure to many factors. Immigrant children face unique challenges that can have sustained, lifelong impacts. Early mental health disorder identification and support can decrease the prevalence and close the gap, improving immigrant children's overall well-being. Comprehensive mental health screenings, cultural sensitivity, and complete health history help support high-quality care for patients and their families. While cultural humility is essential for pediatric nurses to deploy when working with immigrant children, we must also advance our knowledge to advocate for this most vulnerable patient population. Pediatric nurses care for immigrant children, yet the unique needs of this population are often not adequately addressed. In addition, delayed identification and treatment of mental health disorders can intensify the prevalence in this population. With increased awareness of these children's challenges, pediatric nurses will be informed and inspired to provide holistic care through a trauma-informed approach. Pediatric nurses' understanding of social and legal implications allows for bedside and legislative advocacy.

Digital Learning Library for SICU Patients: 12 Hours Post-Extubation

Charlotte Murphy

Faculty Mentor: Mary Murphy

Booth: 101

Abstract:

Post-operative education is a vital part of recovery. Patients in the Surgical Intensive Care Unit (SICU) often feel vulnerable, fearful, and may be disoriented. Proper teaching can increase health literacy, reduce confusion and anxiety, and better prepare patients for discharge. Current teaching methods rely on providers' subjective views of topic importance, and often assume patients' literacy level or readiness for learning. Online education tools have the potential to enhance current patient education standards. While observing the SICU at West Haven's VA Hospital, I recognized that patients lacked understanding of their care and symptoms. QR (quick response) codes allow for accessible, just-in-time (JIT) learning. Evidence-based literature states that when linked to a digital learning library, these QR codes provide a user-friendly tool, applicable for all ages. They also act as a cost-effective resource for hospitals and bridge the gap of healthcare understanding. I created an interactive website, accessed by a QR code, which addresses patients' most asked questions. The QR code is printed on a flyer for nurses to share with patients. By addressing fears and anxieties surrounding post-op patients in the SICU, online education can lead to better outcomes and a decrease in readmissions.

Keywords: patient education, just-in-time, online, accessible, QR

Dexcom Education for Older Adults with Type 2 Diabetes

Jocelyn Echevarria

Faculty Mentor: Mary Murphy

Booth: 102

Abstract:

Diabetes is the 8th leading cause of death in the United States (CDC, 2023). Over 37 million Americans have diabetes, and roughly 90-95% of them have type 2 diabetes (CDC, 2023). Persistent uncontrolled diabetes can cause damage to nerves, blood vessels, and vital organs. While observing the 5 East Medical Step-Down Unit at the Veterans Affairs Medical Center, many of the older patients have type 2 diabetes. In addition, these patients either do not have a continuous glucose monitor or do not understand how to use their continuous glucose monitor. A continuous glucose monitor, also known as a CGM, tracks blood glucose levels 24 hours a day. The Dexcom G6 is the latest CGM system that provides glucose readings without the need to fingerstick. With the Dexcom G6, patients can monitor their glucose levels at any time and see their glucose trends over the span of a few hours or days. A brochure was created as a learning tool to teach patients about the benefits and use of the Dexcom G6. Including the information provided, a QR code is available to direct patients to more information on the Dexcom website. Nurses will now have a simplified education tool to provide to patients needing teaching on the Dexcom G6. This education tool will help type 2 diabetic patients understand how to use their CGM and improve their diabetes management.

Implementing the 5 P's of Purposeful Rounding to Improve Quality of Care

Alexandra DiMaria

Faculty Mentor: Mary Murphy

Booth: 103

Abstract:

Quality of care on a stepdown unit is something that hospitals are constantly trying to improve upon. Patients often report a lower quality of care due to basic needs not being met in a timely manner. Therefore, it is essential that nurses ensure that the time spent in each patients' room is purposeful and addresses any needs they may have. Doing this can reduce call bell use, improve safety, and patient satisfaction, and thus improve the overall quality of care (Lavenburg et al., 2015). Observing nursing care at the 5W stepdown unit at the West Haven VA Medical Center, the implementation of the 5 P's of purposeful rounding would improve overall quality of care. The 5 P's of Purposeful Hourly Rounding; potty, position, pain, possessions, and personal needs, provide a guideline for the nursing staff to address patient needs with each patient encounter. A systematic review showed that units that implemented the 5 P's into practice saw a reduction in call bell use, falls, pressure ulcers, and an increase in patient satisfaction (Lavenburg et al., 2015). Staff nurses reported that the strict schedule of hourly rounding was impractical, which moved the focus of this research from the frequency of rounding to the needs addressed within each patient encounter. An infographic was created as a guideline for the nursing staff to address the 5 P's of purposeful rounding, in order to improve the quality of nursing care and improve patient outcomes.

Nursing Education for Intravenous Infusion of Iron

Sophia Pinter

Faculty Mentors: Mary Murphy, Rose Iannino-Renz

Booth: 104

Abstract:

Intravenous infusion of iron sucrose has recently become more prevalent in nursing care to effectively treat iron deficiency anemia. In the past, intravenous iron infusions were associated with a moderate risk of allergy and/or severe adverse reaction. Therefore, this method of iron supplementation was seldom used. However, with new formulations utilizing fewer preservatives, intravenous iron sucrose infusions are beneficial and safe. In recent prospective clinical trials reviewing all modern preparations of iron intravenous supplements, the risk of moderate to severe infusion reaction affect <1% of patients. (Asija et al., 2022) On the Step-down Unit at the West Haven VA Medical Center nurses regularly infuse iron to increase patient iron and hemoglobin levels. Since this is a recent advancement in treating iron deficiency anemia, it is essential for nurses to be educated on its guidelines, purpose, and side effects. This research project includes data that encourages proper nursing care of patients with intravenous iron sucrose infusions. For instance, nurses must be aware that iron infusions can cause certain side effects in patients like constipation. Although rare, the nurse needs to monitor the client at the start of an iron sucrose infusion for possible infusion reaction. This anaphylactic reaction has warranted several intravenous iron solutions to have black box warnings. The final step of the nursing process is evaluation. Nurses should be aware that they must monitor the patient's complete blood count to ensure that this treatment has been effective in treating iron deficiency anemia. In relation to this project, a flyer has been created to demonstrate to the unit nurses the guidelines, purpose, and side effects of intravenous infusion of iron sucrose.

Teamwork Makes the Dream Work

Alison Guidarelli

Faculty Mentor: Mary Murphy

Booth: 105

Abstract:

This nursing research capstone project focuses on the favorable effects of fostering a positive culture of teamwork and collaboration to improve patient outcomes and nursing staff unit environments. This project will investigate the impact of adopting a teamwork mentality on medical-surgical units, as personally witnessed in high-performing emergency departments (ED) and operating rooms (OR). The studies indicate a positive correlation between good teamwork and positive patient outcomes. The literature details effective methods to prioritize teamwork and identifies the best practices within high-performance settings. Adopting this evidence-based mindset within the medical-surgical nursing staff is possible. The current project highlights the key characteristics seen in the ED and OR which contribute to the increase in quality patient care and nursing work environment. The current project lists strategies to improve and implement collaborative teamwork within the nursing staff to create a positive work environment that is associated with improving patient outcomes. Incorporating and encouraging participation and engagement in open communication, leadership initiatives, and quality improvement measures will ultimately improve patient outcomes. Teamwork promotes overall nurse well-being and prevents burnout by creating a positive and supportive work environment. In connection with this research project, a QR code linking to a website shows the importance of teamwork for nurses to see the significance of collaboration for their team and patients. This simple and interactive feature is practical because it only takes a short time to review. Overall, the project demonstrates the significance of nursing staff of medical-surgical units adopting a teamwork mentality as seen in the ED and OR. Teamwork and collaboration methods aid nurses in improving effective communication, quality patient care, and positive working environments. The benefit of a positive work environment will improve patient outcomes. KEYWORDS: teamwork, collaboration, quality patient care, open communication, leadership initiatives, effective communication, nurse well-being, burnout.

The Importance of Consistent Peripheral Venous Catheter Assessment

Mary Gerard

Faculty Mentor: Michele Lecardo

Booth: 106

Abstract:

Peripheral venous catheters (PVCs) are seen in all areas of healthcare. Most hospital inpatients have PVCs inserted proactively for maintenance fluids and subsequent medication administration.While observing the 6W Medical Surgical Unit at Norwalk Hospital, patients often reported discomfort at PVC sites. Other patients felt that their concerns about PVC sites were not taken seriously. Similarly, differences in PVC care prompted patients to stress about infection risk. Failure to recognize the substantial risk of PVCs can lead to negative patient outcomes. Although most hospitals have policies in place to prevent PVC complications, 69% of PVCs fail and lead to treatment complications (Ray-Barruel, 2018). Failed PVCs and subsequent treatment complications can be both painful and stressful for patients (Cooke et. al, 2018). Furthermore, patients diagnosed with PVC complications are more likely to experience longer hospital days, higher mortality rates, and increased treatment costs than patients without PVC complications (Lim et al., 2019).As a result, consistent assessment becomes vital. Proper care and early recognition of PVC complications can reduce the likelihood of PVC failure and worsening complications (Atay & Efil, 2021). To guide early detection of PVC complications, a pamphlet was created for staff on Norwalk 6W to highlight notable signs and symptoms to report and key assessments to make.

The Effect of Complementary Therapy in Holistic Nursing

Caroline Schneider

Faculty Mentors: Michele Lecardo, Katherine Saracino

Booth: 107

Abstract:

The hospital setting can be a stressful experience for many people. Patients areconfronted with new diagnoses, the fear of the unknown, and oftentimesunpredicted lengths of stays. Research studies have shown positive effects towards patient quality of life when nursing care encompasses the holistic nursing approach. Complementary therapy can be incorporated into a patient's plan of care alongside medical treatment to help relieve pain, deal with medical stressors, and strengthen the overall well-being. Many forms of complementary therapy are flexible in its use, therefore, allowing them to be used whether or not a patient is in the hospital setting or in their own home. Furthermore, the evidence-based research shows that healthcare workers have also found these forms of therapy beneficial in dealing with stressful work environments. The three examples of complementary therapies discussed in this project include music therapy, guided imagery, and aromatherapy. An infographic was produced for the staff of 6 West at Norwalk Hospital to help educate patients on what holistic nursing entails, the three examples of complementary therapies, and the beneficial outcomes it can provide.

Alcohol Withdrawal in the Hospitalized Patient: Barbiturates versus Benzodiazepines

Margaret Phillips

Faculty Mentor: Michele Lecardo

Booth: 108

Abstract:

The prevalence of alcohol withdrawal syndrome (AWS) requiring treatment within hospitalized patients on 6 West at Norwalk Hospital continues to grow. While observing this large population of patients throughout our clinical experience, it is evident that this places a safety strain on the patients and staff alike. In addition, when not appropriately treated, AWS can lead to serious life-threatening illnesses, including seizures, psychiatric complications, and memory disturbances. This research focused on two distinctive treatment methods for patients suffering from AWS and how healthcare workers can better assist them throughout the process. This capstone research project aims to evaluate the varying effects these treatments have on patients and the overall benefits they can provide. Some significant findings of this research are the need for a thorough education on the stages of AWS for staff, the importance of early intervention on long-term outcomes, less addictive behaviors with the use of barbiturates versus benzodiazepines, and the benefits of both pharmacological interventions in conjunction with non-pharmacological treatments to better the quality of life of both patients and staff.

The Effects and Prevention of Nursing Burnout

Madison Reddy

Faculty Mentors: Michele Lecardo, Rose Iannino-Renz

Booth: 109

Abstract:

Nursing burnout is a worldwide problem. With Covid-19, its prevalence has only increased. On 6 West Medical Surgical floor in Norwalk Hospital, education on nursing burnout is a clear need. With ongoing understaffing, increasing patient census, and the common emotional distress nurses experience while caring for acutely ill patients, it is evident that this matter needs to be addressed. The objective of this research study is to distinguish the effects of nursing burnout and the preventative measures nurses and the hospital should take. Using scholarly articles through the Fairfield University Library Website and Google Scholar, a literature review has been conducted to further educate nurses on burnout. A brochure was created to be placed in break rooms, nursing stations, and other areas around the unit and hospital for nurses to bring home or keep on their Work on Wheels. Overall, the results of the study reveal that the effects of burnout include a decrease in quality of care from the nursing perspective, less involvement in improving quality of care, decreased unit functioning and teamwork, increased turnover rates and decreased career satisfaction. Prevention of nursing burnout includes, but is not limited to, open communication among nurses, investing in nursing burnout programs, and self care. In conclusion, the attempt to decrease burnout will increase the well-being of nurses resulting in better quality of care within the unit.

Anticoagulation Therapy in Post-op Patients; How can nurses maximize adherance and outcomes in post-op orthopedic patients?

Lily Bromley

Faculty Mentors: Patricia Lamb, Rose Iannino-Renz

Booth: 110

Abstract:

This teaching project focuses on ways to increase patient adherence to recommended anti-coagulation therapy in post-op patients. Inspiration for the need to explore this topic came after my 12 week rotation on a surgical floor at Greenwich hospital, watching patients dismiss the idea of this therapy after finding out that it was a once daily Enoxaparin (Lovenox) injection. Throughout my research, I looked into the importance of anti-coagulation therapy by looking at statistics as well as physician recommendations based on evidence based practice. From here, Ithen explored comparable alternative therapies, specifically the use of oral anti-coagulants, in hopes of increasing patient adherence to this highly recommended and essential therapy.

Educating Caregivers on Tracheostomy Suctioning at Home

Julia Joyce

Faculty Mentor: Patricia Lamb

Booth: 111

Abstract:

A tracheostomy is a surgical procedure that creates an airway to relieve obstructed breathing in emergency situations. Following this procedure, approximately 20% of patients are discharged to their home with the tracheostomy airway in place (Cherney et at., 2020). This leaves families and caregivers with the responsibility of conducting specialized tracheostomy care that can be life-threatening if done incorrectly. Tracheostomy suctioning is an essential task performed to clear mucus and secretions from the artificial airway. On EP 4.6 at Yale New Haven Hospital, there were many patients discharged to their home with a new tracheostomy. However, caregivers are anxious about carrying-out tracheostomy suctioning due to a lack of education on correctly performing this skill. The importance of educating caregivers was discussed with nurses on the unit so that patients can be safely discharged. This research project focuses on thoroughly instructing caregivers on tracheostomy suctioning so they can feel comfortable performing this skill at home. Evidence-based research shows that providing multidisciplinary education to caregivers before patient discharge increases competence and confidence in the skill. An educational handout with various teaching methods was created to teach caregivers how to suction a tracheostomy and can also be used as a reference as needed.

Validating Life and Loss: Nursing Support for Bereaved Parents

Nicole Hegarty

Faculty Mentors: Patricia Lamb, Katherine Saracino

Booth: 112

Abstract:

Infant loss is an emotionally draining and often traumatizing event for both the parents or families who experience it and their healthcare providers. The maternity unit at Greenwich Hospital only has a few nurses who are further educated on bereavement care. There is a desire to spread this knowledge and practice amongst all of the maternal health staff, but it is not clear how best to address this topic. In the U.S., the infant mortality rate is 5.4 deaths per 1,000 births, and the rate of infants who are stillborn is 1 in 175 births (CDC, 2022). Parents who lose an infant experience intense grief, yet they do not always receive the support they deserve because infant loss is still a taboo subject in society. While this topic is difficult to discuss because of the emotions and fears it elicits, there are ways in which the healthcare providers and community can support the bereaved parents that need to be further examined. An important aspect of bereavement care is the validation of their roles as parents and acknowledging the reality of their loss. The evidence-based literature in this project reveals that patients' experiences with bereavement are heavily persuaded by the care and support, or lack thereof, that they receive from healthcare professionals. Furthermore, the evidence-based literature demonstrates how nurses and other healthcare providers can facilitate a bond between the parents and their infant by creating mementos, allowing time and contact with the infant, and providing emotional support and validation. These memories and experiences as parents can decrease the risk of complicated grief as their journey with grief continues after discharge (Camacho Ávila et al., 2020).A QR code linked to learning material was created in connection to this research as an educational tool for healthcare providers on appropriate bereavement care practices, so that providers can improve the patient experiences of bereaved parents and aid in their journey with loss and grief.

Importance of Promoting Non-Pharmacological Therapies for Postpartum Depression

Emily Hanania

Faculty Mentor: Patricia Lamb

Booth: 113

Abstract:

Despite postpartum depression being very common among women, there is still a lack of effective treatment that prevents remission and that women are comfortable with. On the postpartum unit at Yale New Haven Hospital, RNs have the opportunity to discuss postpartum depression and its treatments, but there is a lack of non-pharmacological treatment options provided and a lack of a resource for patients to bring home with them. This research project focuses on the importance of RN promotion and education on non-pharmacological treatment options for postpartum depression. Significant findings of the evidenced-based literature include that many women are hesitant to receive pharmacological treatment for postpartum depression due to concerns about adverse effects on the baby through breastfeeding. Additionally, findings show that pharmacological treatment alone is not always enough, supporting the need for non-pharmacological treatment as well. The literature supports that cognitive behavioral therapy (CBT), interpersonal psychotherapy (IPT), peer support, electroconvulsive therapy, in-home visits by RNs, physical therapy, kinesitherapy, music therapy, and acupuncture are all effective treatments that have no negative effects. In addition to the research presentation, an infographic brochure was created for use by RNs and patients on the postpartum unit that discusses the symptoms of postpartum depression and what non-pharmacological treatment options are found to be effective. There continues to be a need for more research conducted on the efficacy of non-pharmacological treatments independent of pharmacological treatments.

Use of Patient Medication Records to Improve Medication Reconciliation in the Emergency Department

Danielle Grosso

Faculty Mentor: Patricia Lamb

Booth: 114

Track: Community-Engaged Learning

Abstract:

Medication history errors have the possibility of causing significant adverse medical events, leading to negative patient outcomes and increased costs of care. Over 40% of medication errors are related to inadequate reconciliation, which can be overlooked in high-acuity environments, including the emergency department. Medication reconciliation is defined as the process of collecting, updating, and maintaining a current and accurate list of medications taken by a patient. However, many patients, and especially those prescribed many medications, struggle to recall and accurately report their medication regimen. In a high acuity setting, as observed in the emergency department, the prolongation of this process can consume vital time. Many patients report willingness to utilize a self-administered medication history form, whose application would increase patient autonomy and involvement in care. For this reason, this project involved the development of a medication history sheet to enhance the efficiency and accuracy of the medication reconciliation process within the emergency department. This tool is portable and accessible by both patients and medical personnel, thereby promoting patient empowerment and safety.

The Importance of Early Postpartum Pumping and Hand Expression for NICU Mothers

Katherine Brennan

Faculty Mentors: Rose Iannino-Renz, Patricia Lamb

Booth: 115

Abstract:

The postpartum period for a mother involves abrupt changes both physically and hormonally. Mothers are expected to quickly adjust to their new role despite these changes, as well as engage with and provide for their infant. This is especially difficult for mothers of NICU babies who need extra care and it can be challenging for these parents to adapt as quickly. Support from healthcare professionals is essential for this population especially surrounding the importance of early postpartum breast pumping and hand expression. According to the CDC, evidence suggests that breast milk is the best source of nutrition for most infants and can protect both mother and baby against some short and long-term illnesses and diseases (CDC, 2022). While observing the Labor and Birth and MSCU units at Yale New Haven Hospital, many patients had time to prepare for their babies to go to the NICU, but they still did not receive much education about how to be involved in their child's care. Breast pumping was not always initiated shortly after birth and moms often went hours before pumping for the first time. The evidence-based literature presented here addresses the value of early breast pumping for NICU moms and the positive effects it can have on both their lives and their childs. A flier was created in conjunction with the research presentation for the Labor and Birth and MSCU units at YNHH that includes information regarding breast pumping education, its benefits, and information for nurses.

The Benefits of Palliative Care for Heart Failure Patients

Briann Abruzzese

Faculty Mentors: Rose Iannino-Renz, Katherine Saracino

Booth: 116

Abstract:

Patients with heart failure encounter many medical issues along with their diagnosis. Heart Failure is both physically and emotionally draining for a patient. Research has shown that palliative care has many benefits for a patient's quality of life. Palliative care improves patient outcomes. Palliative care enables patients to find comfort and seek symptom management at any stage of their disease. While caring for patients on 6s at St. Vincent's, it is clear many patients would benefit from palliative care. The research in this project explains the benefits of palliative care for a patient's quality of life. It also promotes patient autonomy. This project can empower healthcare professionals to introduce palliative care to their patients early on in their prognosis. Palliative care provides patient-centered holistic care for patients with heart failure. It improves a patient's care by implementing all aspects of care such as mind, body, and spirit.

Assessing Pain in Cognitively Impaired Older Adults

Meghan Megill

Faculty Mentors: Rose Iannino-Renz, Michele Lecardo

Booth: 117

Abstract:

"Cognitively impaired older adults are at high risk of improper recognition and management of pain during hospital stays. Older adults with cognitive impairment, like dementia for example, have a hard time communicating their pain even if they have diagnosed conditions known to cause pain (Natavio et al., 2020). In hospital settings patients report pain subjectively, meaning that pain often is missed in patients who have barriers to verbal communication. High levels of untreated pain can negatively impact patient outcomes.While observing the 6W Medical Surgical Unit at Norwalk Hospital, many older adults with cognitive impairments were admitted to the floor. While these patients were displaying behaviors associated with pain, the nurses on the floor faced challenges in determining these patient's levels of pain due to the patient's not being able to verbalize their pain. One way to face this challenge is for nurses to implement observational pain assessments. An observational pain assessment tool that can be used is the Pain Assessment Checklist for Seniors with Limited Ability to Communicate (PACSLAC). The PACSLAC consists of a checklist focusing on behaviors related to pain to determine a pain score. Providing nurses with better knowledge and understanding of observational pain assessment tools will improve pain management and quality of care for cognitively impaired older adults (Tsai et al., 2022)."

The Importance Of Using Chlorhexidine to Prevent Hospital Acquired Infections

Meghan Callaghan

Faculty Mentor: Rose Iannino-Renz

Booth: 118

Abstract:

When patients are in the hospital, their risk for infection increases as a result of many factors. This causes substandard patient outcomes and can increase their length of stay in the hospital. On the South Pavilion 6-4 Surgery/Trauma floor, there are many patients who are at an increased risk for infection due to their postoperative status or need for central line access. One of the duties of the registered nurse is to promote health in the patient, which includes providing them with daily care and hygiene. This daily care is something that can be easily overlooked due to the nurse's lack of time, on top of the fact that it might not seem as important as other tasks. For many patients, chlorhexidine baths can aid in preventing hospital acquired infections or central line associated bloodstream infections (CLABSI). Even though this care is often ordered by providers, it is something that many nurses on this floor were seemingly putting off or skipping over. Despite the evidence that chlorhexidine baths are a crucial part of preventing hospital acquired infections, it seemed that there was a knowledge deficit at the bedside on why this care was important. In order to create awareness on the importance of chlorhexidine baths, an infographic using evidence-based research was created. Upon discussion, the nurses on the unit demonstrated an understanding on the importance of this type of care and noted the importance of including it in a patient's daily care, where applicable.

Promoting Effective Discharge Using the Teach-back Method on a Surgical Unit

Katherine Visgilio

Faculty Mentors: Rose Iannino-Renz, Patricia Lamb

Booth: 119

Abstract:

Following surgery and a stay in the hospital, there is a lot of information that patients need to receive to successfully transition into recovery. The role of the nurse is to provide this important education on things such as medications, follow-up appointments, warning signs for changes in condition, and therapies to promote healing. On Greenwich Hospital's surgical floor, it is standard for nurses to briefly summarize teaching to the patients and then provide literature for their review. This method of delivering information is oftentimes not correctly received by the patient. One alternative method is called the teach-back method, in which nurses ask patients to verbally repeat their teaching and/or demonstrate the techniques they were shown. This project uses six studies and literature from accredited healthcare improvement agencies to investigate the effect of using the teach-back method. Findings demonstrate that incorporating this method into discharge teaching can reduce readmission rates, increase patient satisfaction, and improve nursing outcomes. Key Words: Discharge teaching, readmission rates, teach-back method

Providing Emergency Room Patients with Prompting Questions to Facilitate an Effective Discharge

Thomas Negri

Faculty Mentor: Rose Iannino-Renz

Booth: 120

Abstract:

Going to the emergency department can be scary, especially for those who are not familiar with the hospital setting. In the emergency department in Greenwich Hospital, there were a number of patients who either had low health literacy or were just too afraid to ask questions about their stay, diagnosis, or discharge. This can lead to bad patient outcomes which can cause patients coming back due to a lack of understanding of their discharge instructions. This capstone teaching project examines the literature about the impact of communication on patient outcomes, the effect of health literacy on patients' willingness to ask questions, and doctors' and patients' impressions on the use of question prompt lists in the healthcare setting. Significant findings illustrate that limited health literacy is directly linked to patients feeling as though they cannot ask questions and that questions can help produce better patient outcomes. Other findings introduce that patients like the idea of question prompt lists, and questions show the provider that more explanation is needed. In relation to this research project, a sheet of questions pertaining to medications, treatment, diagnosis, and discharge instructions was created for the patients of the Greenwich Hospital emergency department to help increase patient communication and create better patient outcomes.

The Importance of Educating the Family and Patient with Congestive Heart Failure

Meredith Montella

Faculty Mentor: Rose Iannino-Renz

Booth: 121

Abstract:

Congestive heart failure affects nearly 6.5 million Americans, making it one of the most prevalent, and oftentimes deadly diseases within the present day healthcare system (Heart Failure Society of America, 2023). With a large part of the American population lacking the medical literacy skills in order to understand their diagnoses, educating patients can be difficult for healthcare providers. This lack of understanding, specifically in patients with CHF, leads to frequent hospitalizations, poorer outcomes, and higher rates of mortality (Caddick, 2019).While on the Saint Vincent's Medical Center's cardiology floor, a need for a clear and concise patient-centered educational tool was identified in order to effectively explain the disease process of congestive heart failure. A focus on non-medical terminology combined with simple illustrations allows for the patient and family to gain a basic understanding of the disease while also preparing them for further education and discussion. Research shows that frequent patient education about the disease process significantly improves outcomes in those diagnosed with congestive heart failure (Marques, 2022). Therefore, the implementation of a patient-centered educational tool that lacks complex medical terms will improve patient understanding and lead to better outcomes.

Preventing Ventilator-Associated Pneumonia (VAP) through Oral Care

Jaclyn LaTorre

Faculty Mentors: Rose Iannino-Renz, Andressa Goncalves

Booth: 122

Abstract:

When a patient is intubated and relies on mechanical ventilation to oxygenate, they are at risk for developing ventilator-associated pneumonia (VAP). Ventilators access a patient via an endotracheal tube or a tracheostomy. These open spaces are vulnerable to gram-negative bacilli including Pseudomonas aeruginosa or Escherichia coli which may cause ventilator-associated pneumonia in these patients who, at baseline, are struggling to ventilate. In the Medical Intensive Care Unit at Yale New Haven's 9 North Pavillon, consistent oral care with chlorhexidine rinses as well as maintaining the head of the bed at 30 degrees and suctioning secretions, was a crucial part of care in preventing VAP.This research is deemed at educating nurses to complete oral care with chlorhexidine rinses four times daily to better prevent the progression of respiratory status due to VAP.

The Importance of Communicating With Patients Who are Mechanically Ventilated

Mary Maier

Faculty Mentor: Rose Iannino-Renz

Booth: 123

Abstract:

Communication is one of the most basic patient needs and is the most important aspect of patient and provider relationships. The ICU is a high acuity, complex healthcare setting that is home to advanced medical technology such as mechanical ventilators. These ventilators often take away a patient's ability to communicate needs such as pain, thirst, or comfort levels. Greater than 2.7 million patients in intensive care units (ICUs) in the United States each year are unable to communicate because of the presence of artificial airways and assisted ventilation (D et al., 2019) and most IMV patients have experienced moderate to high levels of frustration when attempting to communicate their needs (Salem & Ahmad, 2018). This inability to speak can often lead to psychological stress and anxiety, neither of which benefit the body's healing process. Not only does the inability to communicate affect patients, but it also affects nurses as well. In many ICU's, there was no defined protocol for how to communicate with ventilated patients. It was found that nurses often assume the needs of patients instead of looking for alternative methods of communication. Communication between mechanically vented patients and medical personnel is something that needs further development because, "effective communication improves patient recovery through enhancing a sense of safety and security, and it might decrease the length of patient stay in the ICU". (Salem & Ahmad, 2018).

Education on Prevention of Foot Ulcerations in Type 2 Diabetics

Chloe Lennon

Faculty Mentor: Rose Iannino-Renz

Booth: 124

Abstract:

Over 37 million Americans have diabetes and approximately 90-95% of them have type 2 diabetes (CDC, 2022). Annually, foot ulcers develop in 9.1 million to 26.1 million people with diabetes worldwide (Beuscher, 2019). Among patients with diabetes, the lifetime risk of developing a foot ulcer is around 25%, thereby accounting for two-thirds of all non-traumatic amputations since lower limb amputations are preceded by foot ulcers in 75-85% of cases (Haworth, 2019). Guidelines developed by the International Working Group on the Diabetic Foot (IWGDF) identify 5 key elements that, in conjunction with proper education for the patient, aid in the prevention of diabetic foot complications. The 5-3 SP Cardiac Medical Surgical Unit at Yale New haven Hospital has a large patient population suffering from the preventable effects of inadequate foot care education in type two diabetics. Through the implementation of an educational program the odds of having risk factors that lead to diabetic foot ulceration were 22.2 times lower than that of those without education over 6 months (Nguyen et al., 2019). With evidence from research that shows diabetic patients learn best from a combined education method (Dincer & Bahcecik, 2020) along with the guidelines laid out by IWGDF, this capstone presents an education format consisting of a brochure handout as well as an audio-visual component that aims to prevent the occurrence of diabetic foot ulcerations in the type 2 diabetic.

The Importance of Infant CPR in Postpartum Discharge Education

Madelyn Wasilus

Faculty Mentors: Rose Iannino-Renz, Katherine Dalton

Booth: 125

Abstract:

When a baby is discharged with his or her parents and/or caregivers from the hospital, the care takers are provided with discharge instructions on how to promote infant safety. At Greenwich Hospital, discharge instructions include safe sleep practices, handling a newborn, car seat safety, bathing practices, and even warning signs for a baby's health. However, there is no information on what to do in the instance when a baby becomes unresponsive. This research project aims to examine the benefits of educating parents on infant CPR prior to discharge, as well as including a teaching tool on CPR in the discharge packet. Research from seven sources, varying across levels of evidence, show the benefits of including infant CPR in discharge education. Significant findings show that CPR is most effective in preventing death when initiated within 10 seconds of unresponsiveness. Providing parents with instructions on how to perform CPR prior to the emergency situation allows them to act fast and start CPR in a timely manner. In addition, SIDS remains one of the leading causes of death for infants in the United States. SIDS cannot be prevented, however educating a parent on what to do when they find their infant unresponsive can help save their life. There is a need for continued research on SIDS and the possible benefits of including infant CPR in discharge education for parents and caregivers.

The Importance of Discharge Instructions Regarding Permanent Pacemaker Insertion

Dominique Clisura

Faculty Mentor: Rose Iannino-Renz

Booth: 126

Track: Community-Engaged Learning

Abstract:

When a patient who just received a permanent pacemaker insertion is being discharged to home, it can be extremely frightening for that patient. Their stress level and nervousness begin to increase because they are no longer in the hospital setting, where the patient is being treated with an around the clock healthcare team. On the cardiac unit of 6 south at St. Vincent Medical Center I saw many patients being discharged to home with PPM insertions. I thought to myself what is an easy way for patients to have some sort of documentation which can ease their stress level at the time of discharge. This is when I came up with an interactive brochure: regarding the signs and symptoms to monitor after the insertion, information regarding permanent makers insertion, and what patient population PPM are available for. This interactive brochure comes with a QR code so, if the patient loses the discharge instructions, they can have easy access on their cellular devices. When researching this topic, I found some of the possible outcomes and complications that can occur in patients after their PPM insertion. I also found research regarding what populations of patients are candidates for a PPM and how physicians determine this based on the clinical findings. In conclusion, we live in a society that is adapting the traditional nursing practices with modern new technology in creating this interactive brochure with a QR code I was hoping to interconnect both practices within the clinical settings.

The Importance of the Role of Fertility Navigators in Chemotherapy Treated Patients

Caitlin Pedote

Faculty Mentor: Rose Iannino-Renz

Booth: 127

Abstract:

A young adult just found out they have cancer. A million things are running through their brain, including how to survive this deadly disease. It is hard to think of anything but surviving. However, if they do survive how is their life after treatment? Are they going to be disabled mentally, emotionally, and/or physically? Do they want a job? Do they want a family? Or Will they be able to have children? On the GYN Oncology floor of North Pavilion 11 at Yale New Haven Hospital, patients face these questions every day. Patients do not know the effects of cancer therapy such as chemotherapy and radiation on their bodies and future.Thus, how can someone expect a patient to choose an untreated life or the consequences of treatment? One of the many roles an RN has is providing an adequate amount of information to the patient to promote a level of ease. In order to create clarity in a time of complexity, more information needs to be taught about the role of fertility preservation pre-cancer treatment. In-services can be used to teach bedside RNs updated information to provide to their patients. This increase in education allows the patients to make informed decisions on their cancer treatment while allowing them options to live their best life post-treatment.

The Infant and Maternal Benefits of Skin-to-Skin Contact for NICU Patients

Erin Oricoli

Faculty Mentor: Rose Iannino-Renz

Booth: 128

Abstract:

In the early guideline development for preterm infant care, the focus was on keeping the infant isolated and preventing unnecessary touch. Parents were often denied access into nurseries until the infant was able to go home. In the Neonatal Intensive Care Unit, parents are fearful for their infants and often describe them as too fragile and tiny to touch. The equipment that helps their baby is also a barrier that prevents parents from engaging in physical touch with their baby. This research project examines eight studies, all various levels of evidence, that highlights the benefits of skin-to-skin contact (SSC). Recent research has shown that sensorimotor interventions, such as SSC and massaging, have been proven to be beneficial for infants in many ways. Some of these benefits include improved brain development, improved weight gain and absorption of nutrients, decreased stress levels, pain reduction, and decreased risk of nosocomial infections. Parents, especially mothers, also benefit from skin-to-skin contact interventions. The birth of a critically ill infant is extremely stressful and parents are often diagnosed with post traumatic stress disorder, depression and anxiety. Depression and maternal stress are reduced significantly when SSC is implemented and parents often feel a sense of control in this situation that could often make them feel powerless. Skin-to-skin contact also facilitates the parent-infant attachment bond which is important for infant development. Although there have been numerous research studies on the many benefits of SSC, there continues to be a need for implementation of skin-to-skin contact in the Neonatal Intensive Care Unit in the United States to provide better care and improve patient outcomes.Keywords: Neonatal Intensive Care Unit, Skin-to-skin contact, brain development, weight gain, stress

The Benefits of An Additional Educational Tool To Understand Managing Atrial Fibrillation Through Cardioversion in Older Adults

Angelina Carciero

Faculty Mentor: Rose Iannino-Renz

Booth: 129

Abstract:

The prevalence of atrial fibrillation increases as people grow older due to cardiovascular aging, long-term exposure to environmental pollutants, and other health conditions.Atrial fibrillation, an irregular cardiac arrhythmia, can lead to a deterioration in health when left untreated. Therefore, medical procedures are commonly performed to restore a healthy cardiac rhythm to the patient. One of the most common procedures is cardioversion. Within the cardiology unit at St. Vincent's Medical Center, patients receive thistreatment on a daily basis. While speaking to several patients on the floor preparing to receive this procedure, many expressed the desire for a simple and comprehensive educational form to assist with understanding the operation. Therefore, in connection with the research presentation, an informational handout was created for prospective cardioversion candidates to obtain more about this procedure.

Arginine and its Impact on Wound Healing

Kathleen Murray

Faculty Mentors: Rose Iannino-Renz, Christina Vermes-DeStefano

Booth: 130

Track: Community-Engaged Learning

Abstract:

Nutrition is a key component of health that plays a major role in wound healing. Many wound healing interventions are time-consuming and costly, putting additional strain on healthcare workers and resources. Therefore, education regarding nutrition is important to reduce the cost of wound treatment and prevent complications during the healing process. Following an injury or operation, the body is under physiological stress and its demands increase, which is why proper nutrition is vital. Therefore, YNHH 6-4 SP Surg/Trauma has a growing need for nutrition education since patients are responsible for ordering meals from the kitchen daily. Arginine is an essential amino acid that facilitates wound healing during its various stages. Arginine has several critical roles in healing and can be found in meat, poultry, nuts, and whole grains. Research has shown the benefits of arginine supplementation for patients with wounds and pressure injuries, as it aids collagen synthesis during the proliferative phase of healing. Several studies have concluded that patients who consumed arginine had faster healing rates and decreased wound sizes compared to those who received a placebo. As a result, education relating to nutrition, specifically arginine, is beneficial to patients as it facilitates wound healing.

Cardiac Ablation for the Treatment of Atrial Fibrillation

Grace O'Connor

Faculty Mentor: Rose Iannino-Renz

Booth: 131

Abstract:

Atrial fibrillation is a cardiac arrhythmia that is a prominent diagnosis on the 6S Cardiac Unit at St. Vincent's Medical Center. According to the CDC, approximately 12 million people in the US will be diagnosed with afib in the next 7 years (CDC, 2022). One of the mainline treatments for this arrhythmia is a cardiac ablation, a procedure that blocks electrical signals in the heart to restore sinus rhythm. The poster in this presentation incorporates evidence based literature to teach patients on the symptoms of afib and how the ablation procedure corrects the arrhythmia. It can be hung in patients' rooms who have been diagnosed with afib so that they and their families can be better educated on the procedure to improve their quality of care and prevent readmission.

Combatting Code Blue Chaos

Mackenzie Nasta

Faculty Mentor: Rose Iannino-Renz

Booth: 132

Abstract:

A code blue event in a hospital is a response to a patient who is experiencing a life-threatening emergency, such as cardiac or respiratory arrest. Code blue events require quick and efficient responses, as the patient's survival may depend on the speed and effectiveness of the resuscitation efforts. When a code blue event occurs, it is crucial that all members of the healthcare team know and stick to their designated roles. A lack of clarity or confusion regarding roles can lead to chaotic and uncoordinated responses, potentially resulting in poor patient outcomes. In the MSICU at Greenwich Hospital, the healthcare team is involved in numerous code blue events each week, and some of these events may not carry out as smoothly as desired. This project aims to prevent code blue chaos by having a code role assignment sheet on the unit to be completed at the start of every shift. This will help ensure that all members of the team are aware of their specific roles, minimizing confusion and improving communication during the event. The sheet will include a notes section at the bottom for any recurring themes/important things to point out during the debrief of a code blue event. The success of the project will be measured by evaluating feedback from healthcare team members about its effectiveness during actual code blue events and analyzing the impact on patient outcomes. By implementing this project in the ICU, the hope is to reduce code blue chaos, improve patient safety, and ultimately improve patient outcomes.

Educating Patients Before Cardiac Catheterizations

Grace Dore

Faculty Mentor: Rose Iannino-Renz

Booth: 133

Abstract:

Many patients with heart irregularities in the cardiac care unit at St. Vincent's hospital are sent to the catheterization lab to engage in procedures that help them and their healthcare team decide on the next steps of their treatment plans. When patients go to the hospital for an operation, they often experience a fear of pain, a loss of control, and generalized anxiety. The root cause of these anxieties can be traced back to a fear of the unknown. Patients are unaware of the procedure, having heard only horror stories of complications in the media. This anxiety can result in a prolonged stay in the hospital with increased postoperative pain. After seeing several patients going through this process, I developed a pamphlet with these specific patients in mind. This pamphlet is designed to be given to all patients with upcoming cardiac catheterization procedures to help better understand the operation, its purpose, and its pre and postoperative care guidelines. With this informative descriptor, patients will have more awareness of their upcoming procedure. This background knowledge can aid in reducing anxiety going into the operation. Furthermore, understanding treatment plans has proven effective in helping patients adhere to treatment, diet, and lifestyle changes post-operatively.

Improving Patient Care Through Proper Utilization of Interpreter Services

Kayla Medina

Faculty Mentor: Rose Iannino-Renz

Booth: 134

Abstract:

As linguistic diversity continues to increase in the United States over time, it is essential that hospitals have services in place to accommodate these changing demographics. Many hospitals now have telehealth interpreter services known as MARTTI (My Accessible Real-Time Trusted Interpreter); MARTTI is a HIPPA-approved medical interpreter service, allowing healthcare professionals to rapidly access interpreters for over 150 languages. Even with the availability of this service, however, some healthcare staff neglect to utilize it in their practice. Research reveals that reasons for staff not using these services include problems with the quality of interpreter services and feelings of a disconnect between themselves and patients when communicating through an interpreter; however, these services offer the best means of eliminating language barriers between patients and staff. The repercussions of not using these services include an increased potential for medical errors, poor patient education, increased length of stay, and higher rates of readmission. Additionally, failing to involve an interpreter is a serious ethical issue, where language becomes a means of discrimination in the healthcare setting; therefore, the threat of lawsuits is another potential consequence of this issue. All healthcare staff should be properly educated on the importance of utilizing interpreter services and how to properly use tools like MARTTI.

Importance and Safety of COVID-19 Vaccine and Boosters

Erin Murray

Faculty Mentor: Rose Iannino-Renz

Booth: 135

Abstract:

Three years after the COVID-19 Pandemic, the public has been offered several vaccines and booster shots to help protect against the virus. As everyone has the choice to become vaccinated, there are still many cases of COVID-19 seen in the hospital, especially in the emergency room (ER). It is vital that patients understand that the vaccines are safe and effective at decreasing the spread of the virus. A strong determinant in receiving the vaccines is the public's perception of its effectiveness (Lunn & Timmons, 2023). In addition to the initial vaccine, boosters are also highly encouraged and necessary in order to avoid waning immunity. After spending time in the Milford Campus Emergency Room, in both triaging and in patient assignments, COVID-19 cases were high, and patients vaccine status' were low. One of the solutions to this problem along with basic efforts to minimize the spread of infections is to receive the COVID-19 vaccine and boosters. Research shows how these vaccines are both safe and effective for adults and children, as it can affect everyone. Studies show how mRNA vaccines, in this case, Pfizer's and Moderna's vaccines, have been shown to be highly safe and effective. However, even with high efficacy, these vaccines need to be given in two doses (Machado et al., 2021). A brochure can be placed in ER patient rooms and waiting rooms for patients to read about the importance of the vaccines to decrease the spread of the virus and for public protection.

Improving Standard Precaution Compliance in the Emergency Department.

Ryan Sullivan

Faculty Mentor: Rose Iannino-Renz

Booth: 136

Abstract:

The practice of maintaining standard precautions in all patient encounters in the hospital setting is a main staple of care for healthcare professionals. In a high census, extremely busy, over capacity emergency department, following these precautions are more important than ever. When these precautions are not followed to protocol due to time constraints or perceived need to cut corners, this can lead to negative effects on a patient's health and outcome. These negative outcomes can be as serious as death, and in the US, there are over 75,000 deaths each year from Hospital Acquired Infections, due tothe neglect of standard and transmission based precautions (Zimmerman, 2016). Following a strict protocol of set precautions in all aspects of patient care is essential for providing safe and quality care for all patients, and is a duty for any health care professional to ensure positive patient outcomes.

Incidence of Stroke in Cancer Patients

Samantha Landry

Faculty Mentor: Rose Iannino-Renz

Booth: 137

Abstract:

The incidence of stroke becomes two times more likely when a patient is diagnosed with cancer. Although stroke is two times more likely in cancer patients, there is little understanding of how the mechanisms of cancer lead to a higher incidence of stroke. On the Medical Oncology Unit at Greenwich Hospital, patients with cancer are at high risk for suffering from stroke. This research project examines fives studies, varying across levels of evidence, to evaluate the different mechanisms that contribute to the increased risk of stroke in cancer patients. Significant findings demonstrate thatthe hypercoagulable state that results from cancer places the patient at higher risk of stroke than the general population. Research also points to the role that both chemotherapy and radiotherapy play in increasing the risk of stroke. This research project also explores new findings from analyses of cohort studies that suggest other theories and mechanisms that may contribute to the increased risk of stroke in cancer patients. While there is a lack of research on the relationship between stroke and cancer, this project looks to identify and understand interventions necessary to prevent stroke in cancer patients. Key words: cancer, risk of stroke, hypercoagulable state, chemotherapy and radiotherapy

The Importance of “Teach Back Methods” for Stroke Patients

Ellen Lavin

Faculty Mentor: Rose Iannino-Renz, Christina Vermes-DeStefano

Booth: 138

Abstract:

This research project focuses on the importance of using the teach back education methods for stroke patients to decrease patient readmission rates. According to the AHA, out of patients who recently suffered a stroke “25% had an all-cause readmission and 15% had an unplanned readmission within 90 days”. This research project focuses on increasing patients' knowledge of their care by being able to describe their pain and symptoms in their own words, and effectively reducing readmission rates. Studies have shown that patients who are provided the teach-back method while in the hospital have a lower readmission rate. Findings also suggest that this method enhances stroke survivor and caregiver learning. Education is most effective when the patient's needs are taken into consideration and perceptions of the education provided are understood. If patients can articulate effectively to the medical staff their needs, overall patient care quality increases. Evidence has shown that protocols and checklists are an effective way to guide the medical staff to meet targets when caring for a stroke patient. This use of the teach back method specially for stroke patients’ education can be utilized on any hospital floor to increase the knowledge and education of stroke patients and to decrease their chance of being readmitted. There continues to be a need for more research into the educational teach back method to decrease stroke patient’s readmission rate, and further educate each patient and their families.

Implementing Treatment Escalation Plans to Assess the Appropriateness of Code Status for Pre-operative Surgical Patients 80 Years and Older

Florencia Caces

Faculty Mentor: Rose Iannino-Renz

Booth: 139

Abstract:

After witnessing patients having undergone resuscitation although harmful at both Greenwich Hospital and Bridgeport Hospital, in conversation with nurses on both floors they stated how appropriateness is not always taken into consideration regarding code status. It is vital to patient autonomy that our healthcare system normalizes the discussion around code status as it allows for greater patient autonomy and more appropriate care (Saymaet al., 2018). Older adult patients and families deserve to be fully informed on the probability of their prognosis improving after CPR attempts as the mortality rate can be as high as 80% (Hu et al., 2022). The conversation surrounding the topic is a difficult one not only for patients and families but for providers as well. It is the duty of the healthcare team to ensure that they provide non maleficent care while also fully informing patients on treatment. The evidenced-based literature presented in this project addresses the use ofTreatment Escalation Plans (TEPs) to allow for conversation to guide the escalation of care in the direction that the patient has decided. Results show that despite poor outcomes many clinicians may not do not consider their attempts to be deemed as inappropriate even if the attempt could be interpreted “as an unjustified disruption of the physical integrity of the patient” (Druwé et al., 2020). TEPs are essential to maintain patient autonomy and guide the healthcare team in decision making.

The Benefit of Music in the Operating Room

Jeffrey Beauvais

Faculty Mentor: Sarah Hirx

Booth: 140

Abstract:

The Operating Room is full of auditory stimulation such as heart monitors, suction, ventilators, etc. These sounds can often be distracting to the surgical team, however, one sound that can be controlled is music. At Hartford Hospital, music in the Operating Room is a seemingly standard practice. Nevertheless, It was never discussed among the surgical team if this hindered or enhanced patient care. This research project examines five studies, varying across levels of evidence, that discuss and evaluate the benefits of music in the Operating Room. Significant findings show that subjects who listen to music while performing robotic surgery have an increase in their surgical performance. Other findings include that music in the Operating Room decreases stress and feelings of burnout among those who work in the Operating Room. It was also found that the majority of people who work in the Operating Room agree with the fact that music should be played in the Operating Room. There continues to be a need for more research in this area, along with the need to educate patients and providers on the benefits of music in the Operating Room.

Reducing Preoperative Anxiety as a Way to Improve Postoperative Outcomes

Lauren Trebour

Faculty Mentor: Sarah Hirx

Booth: 141

Abstract:

Many individuals who are scheduled for or unexpectedly awaiting a surgical procedure, experience a variety of intrusive thoughts and feelings in the Preoperative unit. Although these thoughts can vary between patients, many are reported to be anxiety provoking that can have an impact on the postoperative healing outcomes. Within the Preoperative unit at Hartford Hospital, patients are consistently being admitted and discharged with these anxiety filled thoughts, some so extreme that these patients refuse to continue with even having their surgery, due to having the feeling that they were being rushed and not recognized for these feelings. This research project focuses on the importance of reducing preoperative anxiety as a way to improve postoperative outcomes. Evidence displays that patient anxiety is a pervasive problem that can have far-reaching effects such as increased postoperative pain, increased infection, and longer healing times. A nursing badge can be attached to nurses in Pre-Op and Intra-Op and can be utilized to support nurses in communicating to these patients who are feeling anxious prior to their surgical procedure.

Proper implementation and use of mechanical chest compression devices

Emily Genga

Faculty Mentor: Seyissa Maule

Booth: 142

Abstract:

Cardiac arrest and code blue situations are easily some of the most stressful and intimidating scenarios in the healthcare world. Cardiopulmonary resuscitation certification is one of the primary and fundamental requirements for healthcare workers which largely speaks to the critical importance of this life-saving practice. Witnessing multiple different code blue situations in the Emergency Department at Yale New Haven Hospital provided exposure to the LUCAS mechanical chest compression device. This therefore inspired further investigation and research for the creation of an educational project for healthcare staff in order to ensure proper implementation and deployment of the device. Six different research studies were analyzed in order to explore the harms, benefits, efficacy, and proper use of mechanical chest compression devices in the healthcare setting. Key findings indicate that mechanical chest compression devices deliver precise and high-quality chest compressions that are beneficial in certain patient scenarios “where consistent, high-quality manual chest compressions are not possible or dangerous for the provider” (Wang & Brooks, 2018). Research demonstrates that these devices do not come without flaws including the potential for greater harm and injury to the patient due to aspects such as device failure, prolonged interruption in chest compressions, and suboptimal mechanical device fit (Khan et al., 2018). More current and up-to-date research would be beneficial to provide healthcare professionals with the most evidence-based practice guidelines surrounding the optimal deployment of mechanical chest compression devices.

Keywords: emergency department, cardiac arrest, cardiopulmonary resuscitation, mechanical chest compression device

The Benefits of Diet Education in Diabetes Management

Morgan Hoffman

Faculty Mentor: Seyissa Maule

Booth: 143

Abstract:

As the prevalence of diabetes increases across the country the need for prevention and management techniques has also grown. Diabetes is a chronic condition that ultimately impacts the blood glucose levels in the body. Poorly controlled diabetes can lead to high blood glucose levels and lifelong complications such as neuropathy, kidney disease, and heart disease. At Greenwich Hospitals Intermediate Care Area, there was a consistent theme of patients coming into the hospital with poorly controlled diabetes with little to no knowledge on how to manage their chronic condition. Most nurses and providers were focused on treating diabetes with different medications and not educating their patients on utilizing both medications and nutrition to manage diabetes. This research project examines numerous studies to evaluate the benefits of dietary education in the management of diabetes. Significant findings show that dietary changes in patients that are both diabetic and pre-diabetic have resulted in better health outcomes. It is imperative that providers, nurses, patients, and family members utilize both pharmacological treatments and diet changes to prevent and manage diabetes. There continues to be a need for more education in dietary management of diabetes along with more accessible resources for all people on the diabetic diet.

Key words: Diabetes, diabetic diet, education, prevention, management

Pain assessment and management for nonverbal/non-communicative adult patients

Sabrina Griffin

Faculty Mentor: Seyissa Maule

Booth: 144

Abstract:

This project focuses on the importance of utilizing different tools to assess the pain of patients that are unable to communicate. Pain is a subjective measurement based on the way that the patient is perceiving the feeling. When patients can rate their pain on a scale from 1-10 or verbalize the feelings that they are having it makes it easier for the healthcare team to work in reducing the discomfort. But when a patient is unable to speak or communicate, it makes it difficult to know how much pain medication should be prescribed or if the patient is even in any pain. Many patients are nonverbal/non-communicative due to a variety of different reasons. They may be sedated, intubated, or unconscious. Or have cognitive impairments like aphasia, dementia, or a traumatic brain injury. When treating patients who can't verbalize their pain it is important to focus on behaviors that may be suggestive of pain such as screaming, rapid blinking, clenched teeth, rigidity, and altered breathing. It also may be important to investigate past reasons for pain—is there a chronic condition which they have reported pain for before? And lastly, it is critical to try non-pharmacological measures before switching to an analgesic. Is there anything that the team can do to help relieve the interpreted pain before switching to medication? This project aims to explore ways to assess pain in non-communicative patients and then proceed to manage that perceived pain.

Patient Education Regarding Proper Use of the Emergency Department

Anna Harrington

Faculty Mentors: Seyissa Maule, Katherine Saracino

Booth: 145

Abstract:

Going into the Emergency Department, people tend to believe something to be very wrong and are expecting immediate care and action. However, due to the lack of knowledge regarding proper use of the Emergency Department, that immediate patient care is lacking. In the Milford Hospital Emergency Department, the hallways, unit rooms, and waiting rooms are filled with patients eagerly waiting to be seen. The staff are overwhelmed with the influx of patients while determined to give quality care to each patient. This research project focuses on patient education of the correct uses of the Emergency Department, to decrease overcrowding. One of the biggest problems causing overcrowding is misusing the Emergency Department by making unnecessary visits. These visits are due to the lack of knowledge that individuals have on urgent and non-urgent symptoms. These leads to an increase of redundant visits to the Emergency Department causing nursing staff stress, decreased patient flow, increased wait times, and decreased patient quality care and outcomes. Educating patients on the correct uses of the Emergency Department is important to decrease overcrowding in the unit. In relation to the research presentation, an infographic flyer was created for

the Milford Hospital Emergency Department to be handed out to patients entering before the completion of triage to educate on the difference between urgent and non-urgent symptoms, and the alternative non-urgent health care services.

Prevention of allergy-related errors in pediatric healthcare settings

Olivia Jackson

Faculty Mentor: Seyissa Maule

Booth: 146

Abstract:

This research project focuses on the topic of preventing allergy-related errors that occur in the hospital, with a focus on the prevalence of these errors in pediatric settings. Today, there is a large prevalence of adverse events associated with pediatric allergies. The evidence-based literature incorporated into this project conveys the causes of allergy-related errors in pediatric healthcare settings, of which include inaccurate and incomplete documentation in the electronic health record, the ability to override in the electronic health record, outdated and limited allergy lists and failure to verify orders. Additionally, the evidence-based literature emphasizes the importance of enhancing health information technology systems, implementing allergy status into the medication administration rights and effective communication between the interdisciplinary team regarding a patient's allergy status. Educating healthcare workers about providing quality, safe and ethical care regarding allergy status can help reduce the prevalence of allergy-associated errors. To prevent these instances from occurring and promote awareness about this topic, a checklist was created for the Greenwich Hospital pediatric healthcare professionals to implement when caring for pediatric patients.

The Importance of Following Medication Dispensing Protocols

Emily Bell

Faculty Mentor: Stephanie Caicedo

Booth: 147

Abstract:

My research project focuses on the importance of following a standard operating procedure regarding medication dispensing protocols in order to reduce medication errors and protect nursing licenses in the setting of the Emergency Department.When a patient comes to the ED, they may have to go home with medications prescribed by the physician. Some patients who are treated and discharged home from the ED receive a limited supply of medications, when filling a prescription may not be feasible.There is a Standard Operating Procedure in place within the Yale New Haven System to be followed regarding the Emergency Department Medication Dispensing by a Provider that must be followed.It is important for all members of the healthcare team including the provider, pharmacist, and registered nurse to be aware of this procedure.It is important for the right medication to be dispensed to the right patient and for all members of the healthcare team to be aware of their responsibilities within this standard operating procedure. The evidence-based literature included in this project addresses how often medication error occurs, especially in the ED. Furthermore, the evidenced-based literature addresses the importance of safe medication administration to protect the safety of the patients.Educating all members of the healthcare team on the proper ways medication is supposed to be dispensed to patients discharged from the ED is crucial in eliminating medication errors.In connection to the research presentation, the protocol is easily accessible for the Greenwich Hospital Emergency Department staff including information regarding the purpose, procedure, and responsibilities of each member of the healthcare team about this procedure.

Humanizing the Intensive Care Unit

Casey Collins

Faculty Mentors: Stephanie Caicedo, Rose Iannino-Renz

Booth: 148

Track: Social Justice

Abstract:

Critically ill patients require numerous interventions that can only be delivered in an intensive care unit. Many of these patients require invasive procedures, mechanical ventilation, intubation, and sedation. While these interventions are necessary and life-saving, the chaotic environment they create leads many patients and their families to feel additional stress and anxiety. In the Medical Intensive Care Unit at Yale New Haven Hospital, nurses care for some of the sickest patients in Connecticut. Nurses on the unit are proficient in monitoring their patients and caring for them physically and medically, but a significant number of nurses do not consistently communicate with intubated and sedated patients regarding the tasks they are performing. As a result of this observation, a learning need was identified to promote nurse-patient communication in critical care settings to humanize intensive care. Evidence-based literature reveals that many patients in critical care feel their hospitalization was “traumatic”, and patients and families alike can experience post-traumatic stress disorder (PTSD) following an intensive care hospitalization (Kovaleva, M. 2022). Research shows that merely being “kept alive” by technological advancements is not enough because the physical, social, emotional, and spiritual aspects of care need to be addressed to reduce anxieties and fears (Credland, N., Gerber, K. 2021). To facilitate stronger nurse-patient communication and relationships, a Get to Know Me Board was created to aid nurses in learning more about the person in the hospital bed. Nurses and families can work together to fill out a Get to Know Me Board with information about the patient that would not be found in the electronic medical record, such as their hobbies, likes, and interests. The implementation of a Get to Know Me Board reminds nurses there is a person beyond the medical equipment and procedures and their anxieties can be lessened and relieved through basic communication that will humanize their experience.

Educating Nurses on Turning and Repositioning Patients to Prevent Pressure Injury in ICU Patients.

Margaret Manning

Faculty Mentor: Stephanie Caicedo

Booth: 149

Abstract:

Patients in the ICU are more prone to hospital acquired pressure ulcers than general hospital patients. In order to reduce the occurrence of skin breakdown, patients need to be turned and repositioned every two hours. After observing in the medical intensive care unit at Yale New Haven Hospital and working with a few different nurses each shift, it was noticed that some nurses never turned and repositioned their immobile patients while others made it a priority to complete this every two hours. The importance of this intervention was discussed with a nurse on the unit who was constantly turning and repositioning their patients. The research done showed that ICU patients are more likely to be heavily sedated and immobile, therefore creating the environment for skin breakdown. The patients in the ICU have multiple factors that increase their chances of developing pressure ulcers. Educating nurses on the importance of turning and repositioning and how pressure ulcers affect their patients can increase compliance with this and decrease the amount of pressure ulcers in the ICU.An infographic in the patient's room will educate the nurse on turning and repositioning and allow them to check off after they have done this every 2 hours. This would be helpful in reminding nurses to complete this task before leaving the room.

The Importance of Timely Administration of Parkinson's Medications

Mary McHugh

Faculty Mentor: Stephanie Caicedo

Booth: 150

Abstract:

Medication administration is a very important part of a nurse's responsibility during their shift, and something that takes a lot of concentration and time management to effectively give each patient their prescribed medications. This can be extremely difficult for nurses considering the rise in nurse-to-patient ratios in hospitals across the country. On the 6-3 Neuro Unit at Yale-New Haven Hospital, many patients with Parkinson's disease were often given their medication late or not given their medication at all. For patients with Parkinson's disease, a late or forgotten dose of their medication can be incredibly debilitating for the patient and their symptoms. Parkinson's disease is a progressive neurodegenerative disorder that causes a decreased production of dopamine in the brain. Medications like carbidopa-levodopa and dopamine agonists are needed to be given to patients on time for each dosage to improve their motor and nonmotor symptoms which improve their quality of life (Armstrong, et al, 2020). These dopamine medications are given more frequently than other common medications, so the creation of a sticker to help constantly remind nurses which patients have Parkinson's medications, as well as when they should be given throughout their shift. This tool can have a positive impact on nurses administering Parkinson's medications on time and providing the best care and quality of life to their patients.

Preventing Pressure Ulcers in Hospital Patients

Heather Beers

Faculty Mentors: Susan Franklin, Rose Iannino-Renz

Booth: 151

Abstract:

Pressure ulcers, colloquially known as bedsores, are an ongoing issue that hospitals around the world continuously struggle with avoiding. Also known as decubitus ulcers, are wounds that develop most often over bony prominences from constant pressure which reduces blood flow and damages the skin and/or tissue. Affecting approximately 3 million Americans, these wounds undoubtedly reduce the quality of life for patients as well as place extra stress and work on nurses who are treating them. The evidence-based literature discussed in this project identifies that a thorough risk assessment of every patient, compliance with a strict repositioning schedule, prophylactic products, and adequate nutrition are key to preventing pressure injuries. While working on St. Vincent's 6N unit, patients of varying age, diagnosis, and mobility status had pressure ulcers or were dangerously close to developing them. Educating both nurses and unlicensed assistive personnel on preventing pressure ulcers is imperative. In conjunction with the research presentation, a poster on prevention strategies was created for the St. Vincent's 6N staff.

Therapeutic Communication Toward the End of Life

Grace Lyons

Faculty Mentor: Susan Franklin

Booth: 152

Abstract:

Therapeutic communication is a vital part of our modern healthcare system, and something that every nurse must master in order to give the highest quality of care possible. Therapeutic communication is important in every stage of life, but towards the end of life, therapeutic communication becomes something that helps patients and families get through an extremely difficult time. Patients and families nationwide are experiencing extreme hardships within the hospital and need support in this time of their lives. Respectful, compassionate, and inclusive communication for both patients and families is critical for them to feel safe and cared for as they face a time of uncertainty and difficulty. It is vital that all medical staff working with patients experiencing end of life care are trained in therapeutic communication, not only verbal, but physical communication as well. Identifying ways that healthcare providers can improve end of life communication is very important for helping future patients and families. Findings indicate that “time, preparation, advocacy, organizational resources, and a continuous, relational approach support end of life care communication” (Bennett, 2021). Having trust and confidence in their healthcare providers is deemed very important by patients and families, and therapeutic communication helps to bridge that connection. Only through therapeutic and open communication can pain and distress be alleviated and informed decisions regarding care and future planning can be made.

The Importance of Discharge Education for Heart Failure Patients

Maeve Devlin

Faculty Mentor: Susan Franklin

Booth: 153

Abstract:

Heart failure is the leading cause of death in the United States and the world. This disease is one reason that healthcare costs continue to rise due to new diagnoses every day and the high rates of readmission. Although there are modifiable risk factors to prevent the disease, there has to be a better way to manage the 6.2 million people in the United States living with chronic heart failure (CHF). On six north, Saint Vincent's Hospital's cardiac unit, most patients have a history of or are currently dealing with heart failure. CHF exacerbation brings many patients to this floor, which means this is a readmission for them due to not being able to manage their disease. Considering the amount of people who struggle with CHF, it is important that there are resources for them so that they can control their symptoms and adhere to their treatment plan. This project focuses on the importance of discharge education and the teach back method using five different studies that look at the education given and the readmission rate. These studies reveal that thoroughly educating the patient, using the teach back method, and follow up appointments post-discharge significantly decreases the readmission rate. Using a tool, like a checklist included in this project, will help confirm the education given to the patient while in the hospital and prepare them for managing their prognosis post-discharge.

Barriers to Low Sodium Diet Adherence for Older Adults Hospitalized with Heart Failure

Elise Schmieder

Faculty Mentor: Susan Franklin

Booth: 154

Abstract:

Heart failure is a lifelong condition where the heart does not effectively pump blood because its muscles are weakened. Consuming a diet that is high in sodium can increase risk for heart failure, or lead to complications for those with existing heart failure. There are a variety of different ways to manage heart failure, including specific behavior modifications, medical treatments, education, etc. However, a very widely used management strategy is to follow a low sodium diet. Throughout my clinical experience on 6N at Saint Vincent's Medical Center, I recognized that the patients admitted for treatment of heart failure are older adults who do not adhere to low sodium diets for a variety of different reasons. Barriers to a sodium-restricted diet include distorted perceptions of salt intake, lack of caregiver support, lack of knowledge about the benefits of a low salt diet, and distaste of low sodium foods (Heo et al., 2021). This research project evaluates several studies, which include various levels of evidence, and supports the need for education to nurses and caregivers on adherence to a low sodium diet for older adults hospitalized with heart failure. In addition to research, an infographic was created for both nurses and caregivers to have for reference and review, which includes low sodium food choices, tips for eating healthy, and the benefits of a low sodium diet. There is a continuous need for education to nurses and caregivers regarding adherence to a low sodium diet in order to overcome such barriers and reduce the complications of heart failure.

The Golden Hour Protocol

Karoline Morton

Faculty Mentors: Vanessa Lundin, Rose Iannino-Renz

Booth: 155

Abstract:

Upon delivery of the newborn, it is crucial that healthcare providers, specifically the Labor and Delivery Registered Nurse, advocate for the patient in accordance with the Golden Hour Protocol. This protocol supports delayed cord clamping, skin-to-skin contact, immediate initiation of breastfeeding, and 60 minutes of uninterrupted time. As labor and delivery nurses are consistently caring for new mothers and their newborns, there was an observed and verbalized interest to strengthen their knowledge on this topic so that it can then be implemented into nursing practice. Evidence-based literature reveals the important components and elements of the Golden Hour, as well as the benefits in doing so for both the mother and the baby. These benefits include neonatal thermoregulation, decreased stress levels, improved bonding, increased rates and duration of breastfeeding, improved transitional circulation, and decreased need for blood transfusion. Current literature also supports using a team approach as well as the institution of educational requirements on an ongoing basis. Given these findings, it is essential for nurses to maintain protocol-driven Golden Hour care and interventions. The unit presentation included an informational session that corresponded to a concise and user-friendly infographic in which nurses were able to strengthen their knowledge on the importance of this protocol. This educational handout was developed and shared so that the nurses can refer to the specific policy statements and steps to retrieve online resources for further evidence-based information. In order to fully ensure that patients and their newborns receive optimal treatment, it is crucial that nurses are aware of the ways in which we can advocate for patients in order to provide the highest quality of care.

The Benefit of Complementary and Alternative Medicine for Labor Pain Management

Grace Buffone

Faculty Mentor: Vanessa Lundin

Booth: 156

Abstract:

When a woman goes into labor she experiences a variety of thoughts, feelings, bodily changes, and pain. This labor pain, although subjective to each individual, is often reported to be severe and can have detrimental effects on mother and fetus. On the Labor and Delivery Unit at Norwalk Hospital, the rooms fill with laboring women in pain. Both the patients and nurses quickly turn to pharmacological labor pain relief methods, including epidural analgesia, nitrous oxide, and opioids, all of which possess possible side effects on mother and fetus. Meanwhile, they dismiss complementary and alternative medicine methods for labor pain management, which often have no side effects on mother and fetus. This research project examines eleven studies, varying across levels of evidence, to evaluate the benefits and types of complementary and alternative medicine for labor pain management in laboring women. Significant findings demonstrate that Transcutaneous Electrical Nerve Stimulation (TENS), sterile water injections, acupressure, warm showers, walking, aromatherapy, etc. can decrease the severity of labor pain in laboring women. Other findings include that childbirth without the use of pharmacological medical intervention results in decreased pain after birth, faster recovery, decreased chance of a cesarean section, and increased self-esteem. There continues to be a need for more research regarding complementary and alternative medicine for labor pain management in the future.

Benefits of Delaying the First Newborn Bath

Julia Fifield

Faculty Mentor: Vanessa Lundin

Booth: 157

Abstract:

This project aims to address the gap in education regarding delayed bathing of the newborn. Many new mothers do not have the information they need in order to make an informed decision about when to bathe their newborn and it is important that new parents understand the benefits of delaying the first bath. Newborn babies are at high risk of hypothermia due to their thin skin and lack of ability to regulate their own body temperature. Therefore, it is important to delay the first newborn bath so that the baby remains covered in vernix. This research project examines six different sources to evaluate the positive outcomes associated with delaying the newborn bath. Significant research findings indicate that newborns have greater success with breastfeeding when the bath is delayed at least 8 hours. Additionally, infants are able to better regulate their temperature while still covered in vernix because this provides a protective coating for their thin skin. Although the evidence points to delaying the bath for at least 8 hours, more research will be needed to determine the best possible outcome for newborns.

The Benefits of Donor Breast Milk on infants in the NICU

Kerry Launzinger

Faculty Mentor: Vanessa Lundin

Booth: 158

Abstract:

For many infants in the neonatal intensive care unit, human breast milk is the preferred form of nutrition; however, breast milk from an infant's mother is not always accessible. Donor breast milk provides a safe alternative for infants who are unable to receive their mother's breast milk. In the neonatal intensive care unit at Norwalk Hospital, donor breast milk is used however limited information exists for families regarding the numerous benefits of using pasteurized human donor milk as opposed to infant formula. This research project examines seven studies that investigate the benefits of using pasteurized donor milk among infants in the neonatal intensive care unit. Among these findings include an improved immune response and decreased risk of sepsis, improved feeding tolerance, the prevention of bronchopulmonary dysplasia and decreased risk of necrotizing enterocolitis. To combat the knowledge deficit for parents of infants at Norwalk Hospital's NICU, a brochure was created presenting evidence based findings on the safety and benefits of pasteurized donor breast milk. This education allows parents of NICU infants to make informed decisions in the care of the newborn.

Cervical Insufficiency Education for High-Risk Pregnant Patients

Megan Leahy

Faculty Mentor: Vanessa Lundin

Booth: 159

This research was also presented at *National Student Nurses Association Conference 2023 71st Annual Convention, Nashville, TN*

Abstract:

Preterm labor before 37 completed weeks of pregnancy happens in about 1 in 10 pregnancies. Patients who experience preterm labor often have many questions and are nervous about what is happening. For about 1% of mothers who experience preterm labor, cervical insufficiency is the cause (Mayo Foundation for Medical Education and Research, 2021). Cervical insufficiency is the early dilation of the cervix and typically occurs in the second trimester in patients who have had a prior procedure to their cervix to remove precancerous cells (eg LEEP or cone biopsy). When this condition occurs and delivery happens prior to 23 weeks gestation, the chance of neonatal mortality is extremely high. (Yale Medicine, 2019) Once a patient has this condition, they are unfortunately at risk for cervical insufficiency in future pregnancies. Unfortunately, with cervical insufficiency, many women have little to no warning signs of this condition until preterm labor has begun, making interventions difficult. Overall, this condition is typically diagnosed retrospectively, and can negatively impact the mother's mental health, putting her at risk for anxiety.As a student nurse on the maternity unit at a community hospital in Connecticut, I learned there was no available tool or handout to provide to patients who are at-risk of cervical insufficiency. Although midwives and obstetricians typically diagnose and manage cervical insufficiency, maternity nurses can and should educate patients about the condition as well as offer support. This project focuses on using collected evidence-based information that can benefit high-risk patients and provide maternity nurses with appropriate patient education tools. Educating high-risk patients on this condition will hopefully decrease both emotional distress and preterm births. This educational handout includes a helpful infographic, as well as written information about the available treatment options (cerclage, pessaries) to best educate high-risk patients about cervical insufficiency.References Mayo Foundation for Medical Education and Research. (2021). Incompetent cervix. https://www.mayoclinic.org/diseases-conditions/incompetent-cervix/symptoms-causes/syc-20373836#:~:text=An%20incompetent%20cervix%2C%20also%20called,is%20normally%20closed%20and%20firm.Yale Medicine. (2019). Cervical insufficiency. Yale Medicine. https://www.yalemedicine.org/conditions/cervical-insufficiency

The Effectiveness of Peanut Balls and Frequent Repositioning During Active Labor

Miranda Fazliu

Faculty Mentor: Vanessa Lundin

Booth: 160

Abstract:

Labor pain is unique to each patient and is often challenging and uncomfortable, resulting in the use of pharmacological pain relief. Pharmaceutical approaches to combat labor pain such as an epidural may help relieve the physical sensation, but unfortunately make women less mobile throughout their labor. Immobility has proven to lengthen labor duration and even increase the risk of cesarean delivery. Non-pharmacological approaches to pain management such as the use of peanut balls and positioning may contribute to pain relief while simultaneously working to widen the pelvic opening and facilitate fetal descent and rotation. Research has shown that laboring women with epidurals had significantly shorter labor lengths and a higher likelihood of spontaneous vaginal birth when frequent repositioning and positioning aids were used. On the Labor and Delivery Unit at Norwalk Hospital, many women turn to epidural analgesia to manage their pain which puts them at risk for extended labor durations in the absence of frequent repositioning. The peanut ball has been identified as a safe and non-invasive tool to speed up delivery without negative maternal and neonatal outcomes. These efforts can be valuable to patients with or without an epidural in place. This project aims to educate the Labor and Delivery nursing staff at Norwalk Hospital on use of peanut balls and positioning during labor to achieve optimal fetal position and reduce the risk of maternal and neonatal complications.