

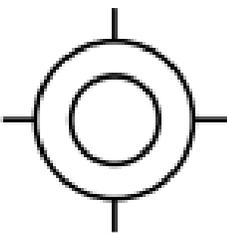


COLLEGE OF HEALTH SCIENCE AND PUBLIC HEALTH

CELEBRATION OF SCHOLARLY WORKS

APRIL 15, 2022

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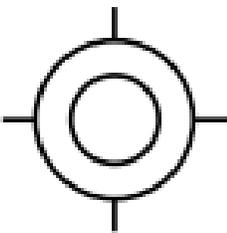
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ABSTRACTS

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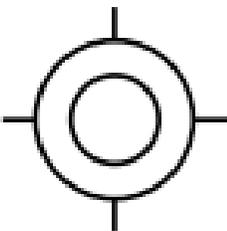
COLLEGE OF HEALTH SCIENCE AND PUBLIC HEALTH

CELEBRATION OF SCHOLARLY WORKS

FACULTY RESEARCH

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Poster #/Title:

#1/Increasing Dental Hygienists' Confidence in Nutritional Counseling Using Motivational Interviewing

FACULTY RESEARCH

Author(s):

Anderson, H., MS, Dental Hygiene

Abstract:

Problem: Dental hygienists have the unique opportunity to educate patients on connections between nutrition and oral health. As students, they are introduced to these concepts, but struggle share this knowledge with patients. The clinician who is not confident in their skills may not perform nutritional counseling.

Objective: This pilot study evaluated an educational module on motivational interviewing (MI) and an assessment and counseling tool to build student confidence with nutritional counseling.

Methodology: The study utilized a quasi-experimental, one-group design to gather qualitative and quantitative data to evaluate change in confidence with nutritional counseling. Students participated in an educational module to review MI and introduce the nutritional risk assessment and counseling tool. Prior to the module, participants completed a pretest about confidence levels regarding MI and nutritional counseling. After three weeks of clinical practice, participants completed a posttest. Data was compared for quantitative changes with a Wilcoxon signed-rank test and qualitative themes from responses through content and narrative analysis.

Results: Twenty-two students ($n = 22$) participated in both the pretest and posttest. There were statistically significant changes in participants' confidence ($p = 0.007$) and comfort ($p = 0.020$) discussing nutrition with patients. Participants struggled to become more confident in MI as demonstrated by no significant change in their feelings surrounding MI ($p = 0.150$). Students reporting increased nutritional counseling sessions showed improvement in their confidence.

Conclusion: This pilot study suggests introducing motivational interviewing with an assessment and counseling tool to aid dental hygiene students may improve confidence with nutritional counseling.

Keywords: oral health, nutrition, dental hygiene education, teaching methodology, motivational interviewing

Poster #/Title:

#2/Circadian Regulation of Electrocardiography (EKG) in Dayshift and Nightshift Schedules

FACULTY RESEARCH**Author(s):**

Elena Crooks, PT, DPT, PhD^{1,2}, Shobhan Gaddameedhi, PhD², Hans P. A. Van Dongen, PhD²

¹Department of Physical Therapy, Eastern Washington University, ²Sleep and Performance Research Center, Washington State University

Abstract:**Purpose**

Heart rate (HR) and heart rate variability (HRV) reflect cardiac autonomic nervous system activity. HR and HRV are influenced by physical activity, posture, sleep, and circadian rhythmicity. The purpose of this study was to dissociate factors affecting cardiac autonomic activity in a laboratory-controlled study focused on circadian rhythmicity.

Subjects

Fourteen subjects (ages 25.8 ± 3.2 years, 4 females) completed the study. Subjects were physically and psychologically healthy as assessed by history, questionnaires, blood and urine analysis, and physical examination by a physician.

Methods

Subjects were in the laboratory continuously for 7 days. Following a baseline day, they were assigned to either a simulated day shift (DS) schedule with nighttime sleep (22:00-06:00) or a simulated night shift (NS) schedule with daytime sleep (10:00-18:00) for three consecutive days. Subjects were then exposed to a 24-hour constant routine (CR) protocol, during which they remained supine and awake in constant dim light (<50 lux) while food was administered in the form of hourly isocaloric snacks. The CR started at 06:00 in the DS condition and at 18:00 in the NS condition. Blood samples were taken

hourly through an intravenous catheter on the baseline day (18:30-21:30) and during the CR (18:30-01:30). Plasma melatonin was assessed to determine the dim light melatonin onset (DLMO) as a marker of endogenous circadian timing. The ECG was recorded continuously with a Holter monitor (DMS 300-3A, Bravo, Huntington Beach, CA). HR and the high frequency (HF) component of the HRV power spectrum (HF-HRV) were calculated from the ECG in 5-minute bins.

Results

The DLMO fell between 20:58 and 22:50 in both the DS and NS conditions whether at baseline or during the CR, indicating relatively stable endogenous circadian timing in both conditions. HR and HF-HRV measured during CR showed significant 24-hour rhythmicity: HR was high during the daytime hours and low during the nighttime hours, and HF-HRV showed the opposite pattern, in both conditions – despite the nearly 12-hour misalignment of time in CR between the two conditions. This indicates that there was greater parasympathetic activity during nighttime hours than during daytime hours, which was not driven by sleep/wake patterns but rather by the endogenous circadian clock.

Conclusions

The CR protocol permitted assessment of HR and HRV while eliminating confounds from sleep, physical activity, and posture. Under these controlled conditions, cardiac autonomic activity showed modest but robust rhythmicity driven by the circadian pacemaker.

Clinical Relevance

Cardiac autonomic activity exhibits 24-hour circadian rhythmicity in which parasympathetic activity is higher during the nighttime hours than during the daytime hours. This endogenous rhythm is relatively unyielding to the timing of sleep/wake behavior. hour rhythmicity in cardiac autonomic activity.

Findings Recently Published:

Hayter EA, Sophie M.T. Wehrens SMT, Van Dongen HPA, Stangherlin A, Gaddameedhi S, **Crooks E**, Barron N, O'Neill J, Brown TM, Skene DJ, Trafford AW, Bechtold DA. Distinct circadian mechanisms govern rhythms in cardiac electrophysiology and susceptibility to dysrhythmia. *Nature Communications*. 2021;12:2472.

Skornyakov E, Gaddameedhi S, Paech GM, Sparrow AR, Satterfield BC, Shattuck NL, Layton ME, Karatsoreos I, Van Dongen HPA. Cardiac autonomic activity during simulated shift work. *Industrial Health*. 2019;57:118-132.

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Baron KG, Reid KJ. Circadian misalignment and health. *International Review of Psychiatry*. 2014;26(2):139-154.

McEwen BS, Karatsoreos IN. Sleep deprivation and circadian disruption: stress, allostasis, and allostatic load. *Sleep Medicine Clinics*. 2015;10(1):1-10.

Morris CJ, Purvis TE, Hu K, Scheer FA. Circadian misalignment increases cardiovascular disease risk factors in humans. *Proceedings of the National Academy of Sciences of the United States of America*. 2016;113(10):E1402-1411.

Skornyakov E, Shattuck NL, Winser MA, Matsangas P, Sparrow AR, Layton ME, Gabehart RJ, Van Dongen HPA. Sleep and performance in simulated Navy watch schedules. *Accident Analysis & Prevention*. 2017;99:422-427.

Thayer JF, Åhs F, Fredrikson M, Sollers JJ, Wager TD. A meta-analysis of heart rate variability and neuroimaging studies: Implications for heart rate variability as a marker of stress and health. *Neuroscience & Biobehavioral Reviews*. 2012;36(2):747-756.

Poster #/Title:

#3/The Impact of Yoga on Dental Hygiene Students' Perceived Pain and Stress Level

FACULTY RESEARCH**Author(s):**

Jackson, S., Speer, L., RDH, MSDH Dental Hygiene

Abstract:**Problem Statement**

Dental hygienists experience an increased risk for work-related pain and injury. Solutions are needed to help dental hygienists prevent and manage these issues.

Purpose

The purpose of this study is to examine the effect of a stretching routine on student dental hygienists' perceived sense of musculoskeletal pain, injury, disability, and self-efficacy. The research question is: Does the introduction of the Core Four method reduce the onset of musculoskeletal disorders in dental hygiene student populations compared to existing models for rest breaks and movement activity sets?

Methods

A one group pre-test post-test design was utilized to evaluate the impact of a stretching program called The Core Four. This program was developed by a physical therapist in collaboration with dental hygiene faculty at the University of Pacific and used with permission. It consists of two postural correction movements and two stretches that take five minutes to complete. The Core Four was designed to be completed at the end of clinic to help dental hygiene students establish a routine for prevention of MSDs that would be feasible to carry throughout their dental hygiene careers.

Data collection is taking place over two summers with a homogeneous sample. In the first summer of implementation, senior dental hygiene students (N=31) completed a pre-test survey at the beginning of summer clinic including the Visual Analog Scale (VAS),

Neck Disability Index (NDI), and QuickDASH. The students were instructed to implement the Core Four stretches immediately following each clinic session over a six week period. A post-test was implemented at the end of the six weeks.

Results

Results from year one using an unpaired t-test indicated the use of the Core Four program resulted in significantly reduced severity of self-reported arm, shoulder or hand pain [$t(31) = 0.27, p = .039$] This study also resulted in an increased ability to open a tight jar amongst participants [$t(31) = -0.35, p = 0.043$].

Conclusion

The Core Four stretching program showed a reduction in self reported arm, shoulder or hand pain and an increased ability to open a new or tight jar. Introducing a stretching program in dental hygiene school enables dental hygiene students to develop healthy habits for increased quality of life and career longevity.

IRB Approval

Eastern Washington University

Approval #: 6019

Approval Date: April 7, 2021

Studies in Progress

This study will be implemented again in the May and June of 2022 to include data from another year of senior dental hygiene students (N=40).

Poster #/Title:

#4/Preparing Dental Hygiene Students in the Care of Children with Special Health Care Needs: An Innovative Virtual Approach

FACULTY RESEARCH

Author(s):

Jones, M., RDH, MSDH Dental Hygiene

Abstract:

Background: The impact of developmental disability (DD) on overall health is well documented. The Accreditation Standards for Dental Education Programs address the need for graduates to demonstrate competency in the care of individuals with special needs.¹ The Standards for dental and dental hygiene education programs are to ensure students have exposure to clinical and didactic educational opportunities to prepare them for the care of persons with developmental disability, medically compromised patients, and other special needs populations. However, access to an adequate patient pool is commonly a barrier. Children with special health care needs (CSHCN) often present with unique oral health needs, calling for a tailored approach to best ensure access to and the provision of care.

Methods: A Special Populations course was developed as part of the EWU dental hygiene curriculum, and is taught to senior dental hygiene students. In a hybrid format, students completed online content over the course of 9 weeks, concluding the course with a half-day hands on workshop. Specific to the pediatric patient, the course included the five Special Care modules² and one of the Preservice Health Training (PHT) modules on the care of a child with Down syndrome presenting for a dental visit.³ The PHT modules have been referred to as virtual patient modules, as they represent real life scenarios of persons with developmental disabilities interacting with medical-dental professions in the course of clinical care. The modules are interactive, whereby participants apply critical thinking skills as they answer questions as they navigate through the evidence-base modules. The Special Care online modules provide

a knowledge base for care of CSHCN in an online, asynchronous delivery method. Content included an overview of CSHCN and oral health, provision of care, supervision, disease prevention, and behavioral guidance.

Results: Incorporating the PHT and Special Care Modules in the Special Populations course was deemed successful in several ways. The hybrid design of the course enabled students to complete the assigned modules independently. Regarding the PHT modules, the value of having a 10-year old boy living with Down syndrome presenting in the role of a dental patient cannot be understated. Anecdotally, students appreciated the opportunity to see a dentist interacting with the child/adolescent patient; observing the interaction left them feeling more confident and prepared for seeing a child/adolescent patient at a dental appointment in this social setting.

Conclusion: Incorporating Special Care online modules on children with special health care needs and the Preservice Health Training module on an adolescent presenting with Down syndrome in the Special Populations course was deemed successful in preparing dental hygiene students for care of the pediatric population presenting with special needs.

Poster #/Title:

#5/Rehabilitation of patients presenting with COVID-19 and hemiparesis: A case series

FACULTY RESEARCH

Author(s):

Jordan, J., PT, DPT, Physical Therapy

Abstract:

Introduction: The novel coronavirus (COVID-19) has many unique features in its presentation. One increasingly noted symptom is the incidence of hypercoagulability which may lead to ischemic stroke. Physical therapists are an integral component of the medical team, and contribute to the early identification of stroke-like symptoms in patients with COVID-19.

Case Presentation: This case series will describe the rehabilitation process of three patients who survived critical illness due to COVID-19 and also presented with right hemiparesis while in critical care. Participants received rehabilitation by physical therapists and occupational therapists on average six times per week with interventions focused on recovery of strength, functional mobility, neuro re-education, and cognition. Mobility status was assessed with the Perme ICU Mobility Score.

Conclusion: Patients who present with COVID-19 need careful screening for neurological impairment. Conventional means to diagnose stroke, such as radiological imaging, can be difficult to obtain in these unique circumstances due to infection control measures. Physical therapists can assist in early identification of neurological impairment in the absence of traditional diagnostic methods through identification of deficits in abilities such as mobility and balance.

Key Words: case report, stroke, critical care

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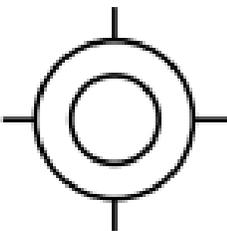
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Poster #/Title:

#6/Pilot Investigation of Persuasive Language in Young Children's Literature For Kindergarten to Second Grade

GRADUATE STUDENT RESEARCH**Author(s):**

Carlston, A., Communication Sciences & Disorders

Faculty Mentor:

Elizabeth Wilson-Fowler, PhD, CCC-SLP

Abstract:

Young children are able to take viewpoints of others and use a variety of spoken persuasive strategies (e.g., bargaining, appealing to rules, and begging) to convince others to share beliefs. With the adoption of the Common Core State Standards (2010), children from kindergarten to 2nd grade are required to say, write or draw their own opinions and provide multiple reasons that support opinions. Much of language learning in schools comes from interactions with the language of books. Thus, it is critical that professionals consider and engage the language modeled in books. **PURPOSE:** We conducted a pilot investigation of the persuasive language found in books written for children between the ages of 5 and 7 years. Our purpose was to determine whether persuasive language in books was consistent with what is known about children's spoken persuasive language. **METHOD:** We analyzed and coded persuasive language found in 16 children's books; inclusionary criteria incorporated commonly read books as defined by bookstore employees and teachers. The language was qualitatively coded into one of five spoken persuasive strategies adapted from a previous study (Weiss & Sachs, 1991).

RESULTS: Three persuasive strategies were underrepresented in books compared to the evidence (i.e., positive sanctions [25%], negative sanctions and requests); two strategies were overrepresented in books (i.e., norm invocation [26%] and assertion).

DISCUSSION: All five persuasive strategies were portrayed in books; inconsistencies may be due to (1) dramatic nature of books; (2) differences in age ranges; or (3) coding adaptations. Speech-language pathologists can use this information to inform assessment and treatment.

Poster #/Title:

#7/Perceived barriers to early patient mobilization among therapy versus non-therapy providers

GRADUATE STUDENT RESEARCH**Author(s):**

Elena Crooks, PT, DPT, PhD^{1,2} Brandon Clem, SPT¹, Teresa Bigand, PhD, MSN, RN², Tiffanie Rampley, PhD, RN³, Nathaniel Nickerson, SPT¹, Crystal Billings, DNP, MSN, RN⁴, Danell Stengem, MSN, RN⁵, Jennifer Hoople, MSN, RN⁶, Emily Herbster, SPT¹, Aidan Gallant, SPT¹, Cameron Chase, SPT¹, Douglas L. Weeks, PhD⁷

¹Department of Physical Therapy, Eastern Washington University, Spokane, WA

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⁷Providence St. Luke's Rehabilitation Medical Center, Spokane WA

Faculty Mentor:

Elena Crooks, PT, DPT, PhD

Abstract:**Purpose/Hypothesis:**

Early mobilization plays a critical role in the recovery of hospitalized patients. However, perceived barriers to patient mobilization impede clinicians from appropriately implementing mobility interventions. The purpose of this study was to determine whether perceived barriers to patient mobilization differed among therapy versus non-therapy staff.

Number of Subjects:

A total of 625 clinicians from 8 different hospitals in two states within the United States were included in the analysis. Clinicians were categorized as therapy providers (physical or occupational therapists; n=71) or non-therapy providers (registered nurses, nurse assistants, or prescribers; n=554).

Materials and Methods:

Subjects reported perceived barriers to early patient mobilization by completing the valid and reliable Patient Mobilization: Attitudes and Beliefs Survey (PMABS), which consists of 3 distinct subscales: knowledge, attitude, and behavior. The PMABS contains

25 statements to which subjects respond to a 5-point Likert scale for each statement (“strongly agree,” “agree,” “neutral,” “disagree,” or “strongly disagree”). Chi-squared tests for independence were conducted on each survey statement to determine whether therapy vs non-therapy providers responded differently to each survey item. Independent t-tests were conducted to determine whether there were differences between therapy vs non-therapy providers in total scores and each of the 3 subscale scores, with higher scores indicating greater barriers to patient mobilization.

Results:

The PMABS total scores were higher among non-therapy providers (38.52 ± 0.45) than therapy providers (24.63 ± 0.79), and differences were statistically significant ($p < 0.001$). Additionally, non-therapy providers had significantly higher scores than therapy providers on all 3 subscales ($p < 0.001$). Item-specific analyses rendered the following as the top three survey items with the largest response differences between therapy and non-therapy providers: adequate time to mobilize patients, understanding appropriate referral to therapy staff, and knowledge of safe mobilization ($p < 0.001$ for all).

Conclusions:

Results suggest that there are significant differences between therapy and non-therapy providers regarding perceived barriers to early patient mobilization. Non-therapy providers perceived greater barriers than therapy providers in their knowledge, attitudes, and behaviors associated with patient mobilization.

Clinical Relevance:

Physical and occupational therapists reported less perceived barriers to early mobilization of hospitalized patients compared to registered nurses, nurse assistants, and prescribers involved in direct patient care. Findings suggest an opportunity for therapy providers to educate and collaborate with non-therapy providers to facilitate safe, consistent patient mobilization activities. Future work is needed to determine and integrate evidence-based interventions for healthcare providers to reduce perceived barriers in attitude, knowledge, and behaviors towards early patient mobilization in hospital settings.

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Poster #/Title:

#8/The Effectiveness of an Educational Workshop for Interdisciplinary Healthcare Students Addressing Prevention, Identification, and Management of Agitation in Traumatic Brain Injury in Inpatient Settings

GRADUATE STUDENT RESEARCH**Author(s):**

Denman, D., Earhart, J., Ho, C., King, A., Occupational Therapy

Faculty Mentor:

Leanna McManus MOT, OTR/L

Abstract:

The goal of this research project was to use the Adult Learning Theory to conduct an educational workshop to interdisciplinary healthcare students to increase their confidence in preventing, identifying, and managing agitation in patients with traumatic brain injuries (TBI) within an in-patient setting. The overall intention behind this project was to improve outcomes of TBI recovery by educating future healthcare professionals about how to provide higher quality service that is sensitive to specific needs and difficulties. Qualitative and quantitative data was collected from healthcare students before and after the literature-informed educational workshop utilizing SurveyMonkey. Thematic and content analysis was used to comprehend qualitative data; Statistical Packages for the Social Sciences (SPSS) Version 27 was used to analyze quantitative data. The data reflects a statistically significant increase in confidence between pre and post educational workshop surveys in all three areas of prevention, identification, and management of TBI-related agitation. Based on the data, we conclude that it is a reasonable recommendation to educate healthcare workers through a literature-informed, evidence-based workshop using the adult learning theory. This is a positive step towards the overall intention to improve outcomes of TBI recovery through education of preventive healthcare service delivery. We encourage further research to bring this model to healthcare settings in the field.

Keywords: agitation, traumatic brain injury, disinhibition, emotional lability, impulsivity

Poster #/Title:

#9/Comparison of Depictions of Autism in Children's Picture Books with the Diagnostic Criteria in the DSM-5

GRADUATE STUDENT RESEARCH**Author(s):**

DePew, S., Communication Sciences & Disorders

Faculty Mentor:

Elizabeth Wilson-Fowler, PhD, CCC-SLP

Abstract:

The prevalence of children diagnosed with autism spectrum disorder (ASD) has increased 180% from 2000 to 2016 (CDC). A great way to teach about ASD is by using books as inclusive resources. Two comprehensive studies have analyzed the content of children's books about autism, in 2015 and 2021, but neither study analyzed books published after 2012 in the U.S. The Diagnostic and Statistical Manual of Mental Health Disorders 5th Edition (DSM-5) was revised in 2013 and added the classification of social communication disorder. This may impact how autism is portrayed in books. We conducted a content analyses of children's picture books to (1) compare the symptoms of ASD published in books to updated ASD characteristics in the DSM-5, (2) compare characters' gender prevalence to CDC reports, (3) examine use of person-first vs. identity-first language, and (4) author's association with ASD. Inclusionary criteria incorporated realistic narrative fictional picture books published between 2018-2021 having main character with ASD, for ages 3 to 8 years. We coded symptoms using rubrics adapted from DSM-5 and variables were tallied for frequency. Findings were mostly consistent with the evidence base: 38% of symptoms represented social communication behaviors (vs. 30%) and 62% represented restrictive, repetitive patterns of behaviors (vs. 70%). Notably, we found a 17% increase in sensory characteristics compared to previous studies. This difference may be due to the 2013 DSM-5 revisions. Sensory characteristics may also be easier to portray in stories. This study generated list of books to use in classrooms when educating about ASD.

Poster #/Title:

#10/The Role of Occupational Therapy in Treating Postpartum Women: A Scoping Review

GRADUATE STUDENT RESEARCH

Author(s):

Duenich, M., Luse, A., Sullivan, S., Woolley, S., Occupational Therapy

Faculty Mentor:

Kaylynn Garrison, PPOTDc, MOT, OTR/L

Abstract: The average number of postpartum healthcare visits for women in the United States currently fails to meet the World Health Organization minimum standard of care. The current healthcare system fails to adequately prepare women and provide the support they require during the postpartum period. Postpartum care is an emerging area of practice for occupational therapy (OT), and this scoping review offers a synthesis of the literature and knowledge within this area of practice.

PURPOSE: A scoping review was conducted with the goal of examining the existing literature within women's health and clearly defining the role of OT specifically in the area of postpartum care for women in the United States.

METHODS: Following the Preferred Reporting Items for Systematic Reviews or Meta-Analyses (PRISMA) 27-item checklist, four databases were used to identify articles relating to gaps in postpartum care (Subquestion 1) and postpartum interventions within the scope of OT (Subquestion 2). A thematic analysis was conducted using Braun & Clarke's (2006) six steps and themes were identified and reported.

RESULTS: For Subquestion 1, there were 17 articles identified as eligible following an abstract and full-text screening for inclusion and exclusion criteria. Of those articles, 16 (94%) were qualified as level III evidence and one (6%) was level II evidence. Subquestion 2 revealed 3 eligible articles, all (100%) qualified as level III evidence. Several systemic barriers to receiving postpartum care on the personal (patients), interpersonal (patient/provider interaction), and interprofessional (provider/institution interaction) levels were identified for Subquestion 1 using thematic analysis. For Subquestion 2, categories of postpartum intervention identified were occupation-based, education, and advocacy.

CONCLUSION: Across the literature, current interventions used in the healthcare field included occupation-based interventions to encourage health management and social participation and education for women regarding preparation and the transition to motherhood. Provider and patient advocacy for disease prevention and health

promotion was identified as a need for postpartum care services. Occupational therapists have a broad educational background that enables the usage of a client-centered, holistic approach that can address the gaps identified in women's postpartum care. Future studies should focus on higher levels of research conducted by occupational therapists in order to broaden the awareness and evidence-based practice of occupational therapists in the realm of women's health, specifically treating postpartum women.

KEY WORDS: Occupational Therapy, Women's Health, Postpartum Care, Scoping Review

Poster #/Title:

#11/Predicting Cognitive Outcomes Using Actigraphy-Assessed Sleep in Patients with Neurological Insult

GRADUATE STUDENT RESEARCH**Author(s):**

Jamie C. Gable, SPT^a; Marissa M. Taylor, SPT^a; Virgeen Stilwill, PT^b; Amy Lou Roberg, PT, DPT^b; Gina Sprint, PhD^c; Douglas L. Weeks, PhD^b; Elena Crooks, PT, DPT, PhD^{a, b}

^aDepartment of Physical Therapy, Eastern Washington University, Spokane WA

^bClinical Research Department, St. Luke's Rehabilitation Institute, Spokane WA

^cDepartment of Computer Science, Gonzaga University, Spokane WA

Faculty Mentor:

Elena Crooks, PT, DPT, PhD

Abstract:

Purpose/Hypothesis Sleep impairments are very prevalent after stroke or traumatic brain injury (TBI). Sleep loss negatively affects cognitive performance, impairing processing speed and memory. The purpose of this analysis was to determine whether sleep actigraphy, as a method of objective sleep assessment, could predict cognitive outcomes in patients post-stroke and -TBI attending an inpatient rehabilitation facility (IRF).

Number of Subjects Forty six subjects (64.9±16.9 years, 28 male) completed the study. Subjects were admitted to an IRF for sub-acute rehabilitation after stroke (n=39) or TBI (n=7).

Materials and Methods Sleep was measured with wrist actigraphy, a sleep monitor worn continuously on the unaffected arm. A full 24-hour period (07:00–06:59) near admission to the IRF was analyzed to determine sleep duration during Night-Time Hours (19:00–06:59), Lights-Out Hours (21:00–6:59), and Total Hours (07:00–06:59). Cognition was assessed with the Rey's Auditory Verbal Learning Test (RAVLT), Trail Making Test Version A (TMT-A) and Version B (TMT-B), administered the morning after the sleep assessment. Descriptive statistics and simple linear regression were conducted using SPSSv25.

Results Regression analyses showed that longer sleep duration during Night-Time Hours and Lights-Out Hours independently predicted cognition on the RAVLT, TMT-A, and TMT-B ($p < 0.05$). Total Hours did not predict cognition on any of the measures ($p > 0.05$).

Conclusions Findings indicate that subjects who slept longer during the nighttime hours performed better on cognitive tests the following morning. Conversely, sleep duration during the daytime and nighttime hours, taken together, was not predictive of cognition, suggesting a restorative property of nighttime sleep specifically, though actigraphy's ability to distinguish sleep from sedentary behavior is debatable. Research is needed to assess multi-night sleep duration and changes in sleep quality across an IRF-stay, and evaluate their effects on functional outcomes in patients post-neurological insult. Future work is also needed to design and assess intervention programs that maximize sleep and cognitive performance in patients postneurological insult.

Clinical Relevance Sleep quantity is an important consideration given its ability to predict the next day's cognitive performance. Clinicians may use actigraphy to assess sleep, and should consider its impact on cognition, which in turn, may influence alertness and participation in therapy among patients attending an IRF post-stroke or -TBI.

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IRB Number: [STUDY2016000065](#)

Poster #/Title:

#12/Sleep duration and subjective sleepiness after stroke or brain injury

GRADUATE STUDENT RESEARCH**Author(s):**

Kyle Grambihler, SPT¹, Jacquelyn Zier, SPT¹, Doug Weeks, PhD², Gina Sprint, PhD³, Kimberly A. Honn, PhD⁴, and Elena Crooks, PT, DPT, PhD¹

¹ Department of Physical Therapy, Eastern Washington University, Spokane WA, USA

² Clinical Research Department, Providence St. Luke's Rehabilitation Medical Center, Spokane WA, USA

³ Department of Computer Science, Gonzaga University, Spokane WA, USA

⁴ Elson S. Floyd College of Medicine, Washington State University, Spokane WA, USA

Faculty Mentor:

Elena Crooks, PT, DPT, PhD

Abstract:**Introduction**

Sleep disruption is common after stroke or brain injury (BI), yet its influence on subjective sleepiness in these patient populations is not well described. The purpose of this study was to measure sleep using a wrist activity monitor (actigraph) in patients admitted to an inpatient rehabilitation facility (IRF) post stroke or BI. A secondary purpose was to determine whether sleep impacted subjective sleepiness.

Methods

Following admission to an IRF, 47 subjects post stroke or BI wore actigraphs to measure sleep for 3 consecutive days. Sleep duration was calculated for two 24-hour periods ("total sleep") and for three nighttime periods (21:00-05:59). After 3 days of sleep monitoring, subjects self-reported fatigue using the Karolinska Sleepiness Scale (KSS) and Wits Pictorial Sleepiness Scale (Wits). Descriptive statistics, repeated measures ANOVA and linear regression analyses were calculated using SPSS v27.

Results

Total sleep (mean=672.24±37.72 minutes) and nighttime sleep (mean=396.70±17.57 minutes) were not different between days ($p>0.05$). Nighttime sleep duration during the third night predicted fatigue levels on the Wits ($R^2=0.14$, $B=4.4$, $3F=7.81$, $p=.01$) but not the KSS ($p>0.05$).

Conclusions

Results from this study show that sleep duration in patients post stroke or BI did not change significantly from day to day. However, the ability of actigraphy to distinguish sleep from sedentary behavior is disputable, particularly in inactive populations. Sleep duration predicted Wits but not KSS scores, potentially due to the Wits' simplicity and pictorial nature. Future work is needed to assess sleep variability and architecture, and their effects on rehabilitation outcomes.

Funding

The authors have no funding to report.

Poster #/Title:

#13/Parent Training on Self-Regulation Strategies for Former Afghan Refugee Children

GRADUATE RESEARCH/WORK IN PROGRESS**Author(s):**

Grunst, K., Roach, L., Hamill, G., Lewis, L., Occupational Therapy

Faculty Mentor:

Danielle DiLuzio, OTD, OTL/R

Abstract:

This Capstone Project explored the potential role of occupational therapy in working with the former refugee population, specifically, this Project identified an intervention that can be used to support former refugee parents in improving self-regulation within their children. Literature supporting potential occupational therapy interventions that could benefit the refugee population was explored. Many challenges in basic needs, traumatic experiences, and disruption of valued occupations for the former refugee population were highlighted within literature. A local refugee resettlement organization was interviewed to identify a potential need for occupational therapy services. Challenges with self-regulation were identified as a barrier seen in former refugee children. Occupational therapists have created evidenced based interventions to improve self-regulation skills in children, but there is limited evidence supporting these interventions specifically with the former refugee population. Out of the current occupational therapy self-regulation interventions, the Zones of Regulation™ curriculum had the most evidence to support its use with the former refugee population. Student researchers gained permission and adapted this evidence-based curriculum to support refugee parents how to support their children in self-regulation. After the adapted curriculum was created, student researchers distributed the curriculum to staff at the local refugee resettlement organization for feedback through a survey on the perceived efficacy of the adapted curriculum with the former refugee population. Although responses were limited, results from the survey indicated a strong potential for the use of the self-regulation curriculum with the former refugee population.

Poster #/Title:

#14/Persuasive Language Intervention for Adolescents with Moderate to Severe Developmental Disabilities: Examination of Language Growth

GRADUATE STUDENT RESEARCH**Author(s):**

Harp, L., Communication Studies & Disorders

Faculty Mentor:

Elizabeth Wilson-Fowler, PhD, CCC-SLP

Abstract:

All high school students should be proficient in using persuasive language (Common Core State Standards, 2010). However, high school students with disabilities perform poorly in language abilities when compared to peers who are typically developing (TD). Recent studies for TD students and for students with Language Learning Disabilities indicate that explicit instruction in revision of writing increases the quality of persuasive writings and students' independence (Harris et al., 2018). Another study measured types of verbs in persuasive writing that allow the writer to express beliefs with a cautious attitude (e.g., might, i.e., epistemic hedges; Uccelli, Scott, & Dobbs, 2013). Growing evidence supports the use of statistical learning in treatment approaches (Plante & Gomez, 2013); clinicians provide multiple models and opportunities to practice targeted skills. **PURPOSE:** We sought to determine whether a specific treatment approach containing multiple models and practice opportunities (PSWIFT) increased: (1) the frequency of use of epistemic hedge verbs, and (2) the level of independence in persuasive speaking of high school students with moderate-severe intellectual disabilities. **METHOD:** Participants were 10 high school students with moderate-severe disabilities. Treatment sessions occurred for 45 minutes twice a week for 6 weeks. Two pre- and post-language samples were obtained, transcribed, and coded for number and variability of epistemic hedges and level of support provided by graduate clinician obtaining samples. **RESULTS:** Paired samples t-test indicated that there was a significant increase in the number of epistemic hedges produced from pre to post ($p < .05$) and no significant increase in level of independence.

DISCUSSION: Our findings confirm others' findings that explicit treatment and practice with persuasion increases persuasive language abilities in high school students. Our findings add to the literature base that high school students with moderate to severe disabilities can learn to speak persuasively.

Poster #/Title:

#15/Effect of Ultrasound Therapy on Tongue Configuration in Children with Cleft Palate

GRADUATE RESEARCH/WORK IN PROGRESS

Author(s):

Hood, A., Occupational Therapy

Faculty Mentor:

Hedieh Hashemi Hosseinabad, PhD, CCC-SLP

Abstract:

Cleft palate (CP) is the third most common craniofacial abnormality worldwide. CP speakers have speech sound error patterns including overuse of the tongue dorsum, a high tongue position relative to the palate, and articulation with involvement of the back of the tongue. These errors are pervasive even after surgical repair of CP, and difficult to treat due to inability to see the tongue during articulation. Ultrasound imaging is an emerging biofeedback technique that shows real-time movement of the tongue in these errored positions. My research purpose is to investigate the efficacy of ultrasound tongue imaging (UTI) paired with traditional articulation therapy (i.e. a motor-based approach) on lingual configuration in children with CP. Proposed participants in this study include children with cleft palate ± lip. My results could improve knowledge of speech therapy intervention approaches for this population, as there is no substantiated speech therapy treatment protocol for cleft speakers to date. This research is in progress and will be ready for defense in Spring 2023.

Poster #/Title:

#16/Occupational Therapy Interventions in Forensic Mental Health Settings: A Scoping Review

GRADUATE STUDENT RESEARCH**Author(s):**

Hudson, N., Walker, J., Roberts, S., Occupational Therapy

Faculty Mentor:

Danielle DiLuzio, OTD, OTR/L

Abstract:

The field of occupational therapy is advocating for its presence and explaining the immense evidence-based benefits it has within the niche of inpatient forensic mental health settings. However, forensic occupational therapy lacks recognition in research and no comprehensive, descriptive review of interventions used in this specific setting exists in literature. The purpose of this project was to examine existing literature on interventions used by occupational therapists within the inpatient forensic mental health settings. A scoping review was conducted in which articles were searched for using eight different databases and sources. Articles were analyzed using a Critically Appraised Resource Portfolio and categorized according to the intervention approaches used. The specified search identified 21 articles relating to interventions used by occupational therapists in the inpatient forensic mental health setting. Interventions found were occupation-based, life skills, cognitive-based, sensory, risk management interventions. Limited higher levels of literature suggest a need for further research for occupational therapy in the role of rehabilitation and the interventions used for individuals in the inpatient forensic mental health setting. The interventions used by occupational therapy should be further evaluated to improve service delivery and role delineation within this emerging practice area. Inconsistencies in the naming of the inpatient forensic setting has led to confusion and limited availability of relevant literature.

Poster #/Title:

#17/Preliminary Examination of Persuasive Language in Children's Books

GRADUATE STUDENT RESEARCH

Author(s):

Lust, R., Communication Studies & Disorders

Faculty Mentor:

Elizabeth Wilson-Fowler, PhD, CCC-SLP

Abstract:

Communicating persuasively requires the use of sophisticated language and strategies; the intent is to influence how others think. Persuasive language develops from birth through exposure to others and to books. Children between the ages of 3 and 7 years make persuasive statements that increase in positivity (e.g., use of hints, emotions, compromise) and decrease in assertiveness (Weiss & Sachs, 1991). Yet, few studies address the use or types of persuasive language found in children's books.

PURPOSE: Our purpose was to preliminary investigate whether persuasive language is represented in children's books.

METHOD: (1) We acquired five fictional chapter books from two commonly read series written for children in 1st through 4th grades. (2) We adapted a scoring rubric taken from Weiss and Sachs which resulted in five persuasive language categories. (3) We calculated the percentage of overall occurrence.

RESULTS: Spoken persuasive language in all five persuasive categories is represented in Unicorn Academy and Magic Tree House series.

DISCUSSION: Positive sanctions (range: 30% to 38%) and norm invocations (range: 13% to 23%) were portrayed with similar frequencies in spoken language and in books. However, more inconsistencies than consistencies were found in the frequencies of the strategies portrayed. Inconsistencies may be due to the need for books to be written with more dramatic language than is commonly used in real life or the development of stronger higher level thinking in grades 3 and 4.

Poster #/Title:

#18/A Preliminary Descriptive Examination of Divorce and Grief Resolution Portrayed in Children's Literature

GRADUATE STUDENT RESEARCH

Author(s):

Martin, T., Communication Studies & Disorders

Faculty Mentor:

Elizabeth Wilson-Fowler, PhD, CCC-SLP

Abstract: Books expose children to language and introduce issues that help children cope with trauma (Heath & Young, 2017). About 33% of children in the U.S. live with divorced parents (U.S. Census Bureau, 2021). The effects of parental divorce have been categorized in multiple ways. Wallerstein (1983) conceptualized 6 coping tasks for children while Kubler and Ross (2009) describe a 5-stage grief process.

PURPOSE: We sought to examine the language in children's books about divorce to determine whether (1) the grief resolution process is accurately portrayed and (2) male vs. female characters experience realistically different grief stages in the divorce process.

METHOD: We acquired 15 books published after 2000 with 55 pages or less, which targeted children 2 to 12 years old, with the main character dealing with divorce. We created a rubric adapting Wallerstein's tasks and Kubler and Ross' 5 stages, and coded language. We tallied the frequency of stages and searched for themes across books.

RESULTS: None of the books contained all 5 stages. 50% of the books contained 1 or 2 stages and the remainder contained 3 or 4 stages. 100% of females and 78% of males experienced depression. Male characters experienced anger/blame (67%) twice as much as females (33%).

DISCUSSION: Books do not accurately reflect all the stages of grief that children experience. Books do not portray denial. However, books are consistent regarding differences in male vs. female experiences with divorce. Speech-language pathologists can use books to develop language associated with grief, expand vocabulary, and help children identify feelings within the stages.

Poster #/Title:

#19/Differences in Subjective and Objective Levels of Fatigue Over Time in Patients with Amyotrophic Lateral Sclerosis and their Caregivers: Initial Findings

GRADUATE STUDENT RESEARCH**Author(s):**

Rylee Price, SPT¹, Elena Crooks, PT, DPT, PhD¹, Gina Sprint, PhD², Douglas Weeks, PhD³

¹Department of Physical Therapy, Eastern Washington University, Spokane, WA

²Department of Computer Science, Gonzaga University, Spokane, WA

³Clinical Research Department, Providence St. Luke's Rehabilitation Medical Center, Spokane, WA

Faculty Mentor:

Elena Crooks, PT, DPT, PhD

Abstract:**Introduction**

Among patients with Amyotrophic Lateral Sclerosis (ALS), increased fatigue is correlated with disability and disease severity. The prevalence and patterns of fatigue in their caregivers have not yet been studied. The purpose of this study is to longitudinally assess subjective and objective fatigue in a sample of four patients with ALS and their caregivers.

Methods

Four patients (62.5±12.9 years, n=3 of 4 male) and their caregivers (51.8±23.0, n=4 of 4 female) participated in data collection over a seven-day period. Subjective fatigue was assessed with a visual analogue scale four times daily. Objective fatigue was measured twice daily using a 3-minute Psychomotor Vigilance Test (PVT), quantified by mean reaction time ("reaction") and number of lapses in attention ("lapses"). Descriptive statistics and mixed effects ANOVA were calculated using SPSS v27.

Results

There was a significant interaction of time by group (patient vs. caregiver) in subjective fatigue ($p=0.02$), with a trend toward significance in the main effect of time ($p=0.07$) but not group ($p=0.72$). The interaction of time by group was not significant for objective fatigue for both reaction and lapses ($p>0.12$); however, while the main effect of time was not significant, the main effect of group was significant for both measures ($p<0.02$).

Conclusions

Findings indicate that time of day impacts subjective fatigue differently in patients with ALS versus their caregivers, with patient levels remaining constant and caregiver levels peaking in mornings and evenings. Additionally, patients showed greater fatigue on objective, but not subjective, assessments than their caregivers.

Funding

The authors have no funding to report.

Poster #/Title:

#20/Exploring the Clinical Perspectives of Pediatric Occupational Therapy Practitioners Utilizing MNRI®

GRADUATE STUDENT RESEARCH**Author(s):**

Kaitlyn Sharp OTS, Daena Hensley OTS, Annie Campbell OTS, Nadine Krop OTS

Faculty Mentor:

Lucretia Berg, EdD, MSOT, OTR/L

Abstract:

Background: Many methods and treatment approaches across the field of occupational therapy have been used in order to promote health and wellness among patients experiencing functional deficits. One method used by some occupational therapy practitioners is Masgutova Neurosensorimotor Reflex Integration (MNRI®). MNRI® utilizes reflex patterns to promote restoration of the nervous system. While available research shows promise for this method, many articles primarily cite anecdotal evidence with poor psychometric properties. Despite the lack of published literature supporting this method, there has been a recent surge in the use of MNRI® among pediatric occupational therapy practitioners within the Eastern Washington region. The primary aim of this study was to explore the clinical perspectives of occupational therapy practitioners who choose to use MNRI® over traditional intervention methods with their pediatric clients.

Methods: A mixed-methods research study was conducted with approval from the Eastern Washington University Institutional Review Board. An electronic survey was administered to occupational therapy practitioners who utilize MNRI® within their pediatric practice, followed by a focus group. Participants were recruited via a convenience sample. A focus group was hosted with three participants in attendance. Researchers asked a series of open-ended questions and facilitated open discussion among occupational therapy practitioners with the goal of understanding the clinical perspectives of those who utilize MNRI® with pediatric clients. Data from the electronic survey was analyzed using simple descriptive statistics and data from the focus group was audio recorded and analyzed using in-vivo coding for thematic analysis.

Results: Eight occupational therapy practitioners responded to the electronic survey, with three participants attending the focus group. Results from the electronic survey found that the average amount of experience in MNRI® was 3.93 years. Other techniques or approaches used with MNRI® included ASI® (n=1; 12.5%), Hyperbaric Chamber (n=4; 50%), Bal-A-VIS-X (n=8; 100%), Handwriting Without Tears™ (n=2; 25%), CranioSacral Therapy (n=5; 62.5%), Myofascial Release (n=6; 75%), Yoga (n=2; 75%), and Brain Gym® (n=1; 12.5%). Results of the focus group found key reported

barriers to using MNRI® was the need for consistent participation in home exercise programs by clients (n=3; 100%), and the high cost of attending MNRI® courses (n=3; 100%). Reported benefits to using MNRI® as an occupational therapy intervention included improvements to sensory modulation abilities, vision, tone abnormalities, and overall neurological development (n=3; 100%). Four themes were identified from the focus group: occupational therapy process, community and family participation, education and training, and neurodevelopment.

Conclusions: Clinical perspectives from this study supported the use of MNRI® as an intervention within the pediatric population. However, available evidence in published literature does not directly support the use of MNRI® as an occupational therapy intervention, therefore MNRI® should be used with caution. As the field of occupational therapy evolves, it is essential to explore new and emerging methods of promoting functional independence among clients.

Keywords: Mixed methods, Reflex integration, Masgutova, MNRI®, Occupational therapy

Poster #/Title:

#21/Increasing the Consideration of Using or Referring Adaptive Yoga for Individuals Post Spinal Cord Injury via an Instructional Video

GRADUATE STUDENT RESEARCH

Author(s):

Weingart, A., Occupational Therapy

Faculty Mentor:

Leanna McManus, MOT, OTR/L

Abstract:

Objective: Although yoga as a therapeutic modality has been shown to benefit individuals with spinal cord injury (SCI), the use of yoga for therapeutic modalities is low for this population. This study explored if educating healthcare workers on the therapeutic benefits of yoga for SCI patients influences knowledge of adaptive yoga as a modality, the likelihood of referral, and confidence in guiding a client through specific poses.

Methods: Through snowball sampling, 27 healthcare workers completed a SurveyMonkey questionnaire with a pre-survey, instructional video, and a post-survey on the likelihood of referral for yoga as a therapeutic modality, comfortability with instructing yoga, and knowledge of yoga for the SCI population.

Results: Participants self-reported an increased likelihood of referral and greater comfortability with instructing and using yoga as part of a rehabilitation program. Participants would have preferred the educational video be created using an individual with SCI, there be handouts to go along with the video, and more information on how yoga may apply to other disabilities.

Discussion: Introduction to the benefits of yoga may increase likelihood of referral and a greater chance of comfortability using yoga as a therapeutic modality for SCI patients. Occupational therapists have the unique skill set to incorporate this meaningful activity as part of SCI rehabilitation and facilitate education on proper alignment and safety in poses.

Conclusions and Relevance: this study found that exposure to yoga as a therapeutic modality increased likelihood of referral. There was statistical significance in comfort level with instructing basic yoga poses and increased knowledge of yoga as a therapeutic modality.

Poster #/Title:

#22/Using a Depression Screen to Predict Fatigue and Cognition in Patients with Stroke or TBI

GRADUATE STUDENT RESEARCH**Author(s):**

Jacqlynn Zier, SPT¹, Kyle Grambihler, SPT¹, Doug Weeks, PhD², Elena Crooks, PT, DPT, PhD¹

¹Department of Physical Therapy, Eastern Washington University, Spokane, WA

²Clinical Research Department, Providence St. Luke's Rehabilitation Medical Center, Spokane, WA

Faculty Mentor:

Elena Crooks, PT, DPT, PhD

Abstract:**Introduction**

Depression is associated with fatigue and cognitive impairment in the months following stroke or traumatic brain injury (TBI). It is unclear what relationships exist among these impairments early in rehabilitation. This study aimed to determine whether depression screening could predict subjective fatigue and objective cognition in patients with acute stroke or TBI while receiving services at an inpatient rehabilitation facility (IRF).

Methods

Thirty-nine patients (mean age 66.8±15.1 years; n=22 male) admitted to an IRF for stroke or TBI completed the study. Depression was assessed at admission using Patient Health Questionnaire-9 (PHQ-9) and groups were dichotomized as depression "unlikely" (score <4) and "likely" (score ≥5). Fatigue measures [Karolinska Sleepiness Scale, Visual Analog Scale, Wits Pictorial Sleepiness Scale] and cognitive tests [Trail Making Test Parts A and B, Rey Auditory Verbal Learning Test] were administered a few days later. Independent samples t-tests and linear regression analyses were calculated using SPSS version 27.

Results

T-tests demonstrated statistically significant differences only in Wits scores (p=0.02), with depression "likely" associated with more fatigue. The regression model was statistically significant, where PHQ-9 scores predicted Wits scores (F=4.78, p=0.04). PHQ-9 scores did not predict other measures (p>0.05).

Conclusions

Study findings indicate that PHQ-9 score ≥ 5 at IRF admission predicted subjective fatigue on the Wits a few days later, but no other measures, suggesting that the pictorial nature of the Wits may indirectly capture feelings of depression. Additional factors may have influenced fatigue and cognition in the days following PHQ-9 completion, which is a study limitation.

Funding

Authors have no funding sources to declare.



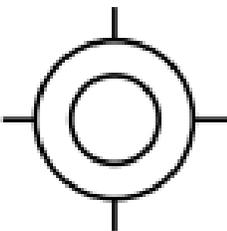
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Poster #/Title:

#23/Neurons: The Inner Communication System

UNDERGRADUATE RESEARCH/WORK IN PROGRESS**Author(s):**

Caviness, L., Communication Sciences & Disorders

Faculty Mentor:

Hedieh Hashemi Hosseinabad, PhD, CCC-SLP

Abstract:

Our bodies are made up of trillions of different cells that all work together to make us who we are. How do all these cells coordinate and communicate with each other to make our bodies move and work as a whole? There are specialized cells in the nervous system called neurons that help our bodies accomplish this task. As a student of communication sciences and disorders it is important for me to know how our nervous system works for internal communication so that our bodies can coordinate the cells involved in respiration, phonation, articulation, and resonance for the production of external communication through speech.

In my neuroanatomy class, we were asked to do a project. I choose to learn more about the neuron. Neurons are one type of cell found in the nervous system and are specialized to provide communication throughout the body via an electrochemical pathway. Their unique features make them good at their jobs. I created a model of the neuron which helped me to focus on the intricacies of the specialized functions of the dendrites, cell body, axon, and axon terminals. The model also allowed me to visualize how the electrochemical pathway is activated and how the action potential quickly travels through the nodes of Ranvier.

The understanding of neurons, the nervous system, electrochemical communication (with associated neurotransmitters), and the afferent and efferent pathways of the nervous system are important in the diagnosis and treatment of neurological communication pathologies associated with such diseases as Parkinson's, MS, ALS, and Myasthenia Gravis. This knowledge will help me to understand where and why there is a breakdown in the speech pathway and to find the most effective and efficient treatments needed for my clients.

Poster #/Title:

#24/Laser Therapy: Wavelengths of the Dental Future

UNDERGRADUATE RESEARCH/WORK IN PROGRESS

Author(s):

Harum, H., Stephens, A., Valdovinos, C., Dental Hygiene

Faculty Mentor:

Sarah Jackson, RDH, MSDH

Abstract:

Laser therapy has been implemented in dental practices for years for its use in hard and soft tissue applications. There is evidence that demonstrates the relevance of laser therapy in the clinical setting, some of which is presented as mixed evidence as whether laser therapy can deliver better outcomes when used as an adjunct to non-surgical periodontal therapy (NSPT). Information regarding the background of lasers, how laser therapy works, different types of lasers, and the oral effects of lasers are important factors in determining the efficacy of using laser therapy as an adjunct to NSPT. Our gathered research aims to answer whether or not laser therapy in conjunction with NSPT will improve the periodontal status of patients with active periodontitis more effectively than traditional NSPT. Research evaluated was found in clinical trials, a case report, a meta-analysis, and a systematic review.

Poster #/Title:

#25/Evaluation of Various Therapeutic Treatment Techniques for Pyogenic Granuloma

UNDERGRADUATE STUDENT RESEARCH**Author(s):**

Hernandez Palacios, D., Dental Hygiene

Faculty Mentor:

Sarah Jackson, RDH, MSDH

Abstract:**Background**

A pyogenic granuloma is a benign oral lesion characterized as an inflammatory hyperplasia that occurs in both men and women, however is more common in women, especially during pregnancy due to hormonal imbalance, pre-existing periodontal disease, certain medications, and traumatic damages. Accurate diagnosis is important in eliminating or preventing pyogenic granuloma.

Method

The treatments for pyogenic granuloma include surgical excision, laser techniques, and alternative options in addition to non-surgical periodontal therapy. The literature review, systematic review, meta-analysis, and case reports from PubMed were the instruments used to provide information for this research.

Conclusion

Imbalance of sex hormones with local irritants is the main cause of pyogenic granuloma in pregnant women. Non-surgical periodontal therapy is suggested as primary treatment for pyogenic granuloma, but if it does not resolve or reoccurs alternative treatment options are available with non-surgical periodontal therapy.

Poster #/Title:

#26/A Visual Aid for Navigating Important Structures of the Brain

UNDERGRADUATE RESEARCH/WORK IN PROGRESS**Author(s):**

Neumeuer, C., Communication Sciences & Disorders

Faculty Mentor:

Hedieh Hashemi Hosseinabad, PhD, CCC-SLP

Abstract:

In Fall 2021, I took neuroanatomy as a part of the coursework needed to complete my BSc in Communication Sciences and Disorders. As a part of this class, I was instructed to create a visual representation of the coronal section of the brain. In particular, the model depicted consisted of the diencephalon, basal ganglia, and brain ventricles. To create this visualization, I utilized white model magic clay and Crayola washable markers to create different colors of clay that would represent various structures. I colored the white pieces of clay with a combination of different colored markers, and I created a visual key with the colors of clay to identify essential structures in speech production. I labeled diencephalon structures such as the epithalamus, thalamus, subthalamus, and hypothalamus which control the autonomic functions of the peripheral nervous system and process sensory information for communication. I identified the caudate nucleus, putamen, and globus pallidus that make up the basal ganglia which are vital for the execution of movements for speech. I also labeled the third and fourth ventricles which produce cerebrospinal fluid that protects and maintains the central nervous system. The visualization that I brought to life helped myself and students to gain knowledge of the general location of these important structures. Having the structures labeled in different colors catered to the learning needs of students who process the most information through a visual modality. Completing this project helped me to gain more knowledge about specific brain anatomy and its importance for communication.

Poster #/Title:

#27/Organoborohydride PPN complexes

UNDERGRADUATE RESEARCH/WORK IN PROGRESS**Author(s):**

Rooney-Sailand, B., Environmental Science

Faculty Mentor:

Eric Abbey, PhD

Abstract:

Abbey's research spells out an efficient one-pot synthesis reaction for creating organoborohydride PPN complexes. It also characterizes the new family of compounds by using analytical chemistry techniques to obtain, process, & communicate molecular information regarding composition (proton NMR, boron NMR, IR spectra) as well as crystal structure/arrangement of functional groups (X-ray crystallography).

The designed method involves an initial reduction of a substituted potassium trifluoroborate (RBF₃K) salt to its respectively reduced borohydride followed by an ionic replacement reaction with PPNCl resulting in our desired product with a very decent % yield. This establishes & idealizes a one-pot synthesis method for turning most members of the organoborohydride family into PPN complexes.

A couple obstacles that had to be adjusted for along the research process was solvent choice, both for the synthesis itself as well as for clean crystallizations. 2-methyltetrahydrofuran (2-MeTHF) was found to give much higher yields than regular tetrahydrofuran (THF), likely because THF was failing to entirely dissolve the formed product so it was accidentally being filtered with celite along with the salts.

Dichloromethane (DCM) was causing issues when trying to attain & solve crystal structures. It seemed that PPN would preferentially form a complex with this solvent over the target borohydride. The work around this was using dichlorobenzene, a bulkier solvent molecule.

These PPN complexes could possibly be used to attach metal ligands, which would open a unique door & spawn some new metal chemistry in the future. While our lab was unable to get this to work effectively with molybdenum hexacarbonyl, there are scientific papers that lay out the specific steps on almost exactly what would theoretically be possible to accomplish using these new compounds. Additionally, having a wide variety of electronic environments (attached electron donating or withdrawing functional groups) enables the manipulation of boron's hydride donating ability for more selective reactions.

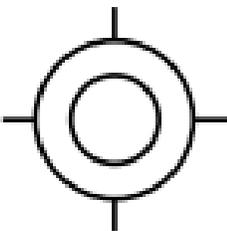


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POSTER EXHIBITION ONLY

The following posters were previously presented at the Communication Sciences & Disorders Department Research Day. These posters are not eligible for prizes.

- ◆ Title: Experiences of International Graduate Students (Master's & PhD) in Communication Sciences and Disorders
Student: Jenna Bingham
Research Advisor: Hedieh Hashemi Hosseinabad, PhD
- ◆ Title: Intelligibility of Cleft Palate Speech: A Comparison between Orthographic Transcription, Interval Rating Scale, and Visual Analog Scale in Reporting Intelligibility of Speech in Children with Cleft Palate
Student: Jenna Cummings and Michelle Glassel
Research Advisor: Hedieh Hashemi Hosseinabad, PhD
- ◆ Title: A Review of Assessment Tools to Guide Therapeutic Interventions for Individuals with Traumatic Brain Injury
Student: Makinzee Edwards
Research Advisor: Lesli Cleveland, PhD
- ◆ Title: The Impact of COVID-19 on Motivation and Isolation in People with Parkinson's Disease: A Survey of Self-Reported Experiences
Student: Katelyn Greaves
Research Advisor: Lindsay Williams, MA
- ◆ Title: DIBLES 8 vs DIBELS Next: A Comparative Review
Student: Hailey Hammer
Research Advisor: Lesli Cleveland, PhD
- ◆ Title: Survey of Caregiver Knowledge Regarding Pediatric Mild Traumatic Brain Injury
Student: Cora Hayden
Research Advisor: Lesli Cleveland, PhD
- ◆ Title: Literature Review: Treatments that Demonstrate Greatest Quality of Evidence for Speech Intelligibility in Children with Dysarthria Second to Cerebral Palsy
Student: Alexis Leighty
Research Advisor: Elizabeth Wilson Fowler, PhD

POSTER EXHIBITION ONLY

The following posters were previously presented at the Communication Sciences & Disorders Department Research Day. These posters are not eligible for prizes.

- ◆ Title: The Impact on Vocal Quality in People with Parkinson's Disease During the COVID-19 Pandemic: A Survey of Self-Reported Experiences
Student: Laura Matthews
Research Advisor: Lindsay Williams, MA
- ◆ Title: A Preliminary Examination of the Impact of Covid-19 Pandemic on Early Literacy Skills
Student: Tenaya Morehouse
Research Advisor: Lesli Cleveland, PhD
- ◆ Title: Augmentative and Alternative Communication Training in Paraeducators: A Survey of Experiences, and Self-Reported Comfort Levels
Student: Courtney Oosting
Research Advisor: Lindsay Williams, MA
- ◆ Title: Experiences of International Faculty in Communication Sciences and Disorders
Student: Meg Perry
Research Advisor: Hedieh Hashemi Hosseinabad, PhD
- ◆ Title: Attitudes Towards Research in Graduate Students in Speech Language Pathology
Student: John Shank and Sheridan Wilkes
Research Advisor: Hedieh Hashemi Hosseinabad, PhD

POSTER EXHIBITION ONLY

The following posters were previously presented at the Occupational Therapy Research Day. These posters are not eligible for prizes.

- ◆ Title: Occupational Therapy in Transitional Housing: Supporting Skill Development for Women Preparing Transition to Permanent Housing
Student:s: Emma Braks, Kendra Clark, Hannah Suh, Erika Thonn
Research Advisor: Kaylynn Garrison, MOT, OTR/L

- ◆ Title: Psycho-emotional education for occupational therapists supporting individuals assuming the role of family-caregiver for people with a Traumatic Brain Injury (TBI)
Students: Caitlyn Baird, Natalie Billharz, Laura Lippman
Research Advisor: Dane Vulcan, MOT, OTR/L

- ◆ Title: Implementing Nature-Based Interventions in Pediatric Occupational Therapy Practice
Students: Casandra Benitez, Natalie Berry, Kate Samp
Research Advisor: Lucretia Berg, Ed.D., MSOT, OTR/L



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THANK YOU!

