

Undergraduate Research Conference

Spring 2020

College of Health Professions

TATELYN WILKINS

Radiation Therapy

The Evolution of Radiation Therapy

Abstract:

This poster will present the evolution of radiation therapy treatment. It is an informative presentation that creates a timeline of how radiation treatment began and how it has progressed since its origin. The poster will show the discovery of the x-ray tube and present discoveries and contributions of the field in chronological order. Concluding with current treatment modalities used in clinics today and discussing potential treatment options developing for future use. Information presented in this poster are referenced from journals found in the library database provided by Texas State University. Also used are relevant articles from the “International Journal of Radiation Oncology, Biology, Physics”. There is also respectable information from a relevant video.

ERIC RODRIGUEZ

Communication Disorders

"Hear Here, Hear There, Hear Everywhere": Successful Factors for Hearing Screening Apps Used for Telepractice

Abstract:

Clients who receive speech-language intervention via telepractice must have a hearing screening prior to any intervention. This study investigates which factors are essential for a successful hearing screening smart device app. The study also evaluates whether existing apps can be considered a valid “hearing screening.”

The American Speech-Language-Hearing Association (ASHA) considers “best practice” to have certified personnel perform a hearing screening before intervention. Access to appropriate personnel is limited in rural domestic areas and internationally. The use of hearing screening apps has been researched, but more research is necessary to test the efficacy and accuracy of currently available apps.

Evidence-based practice evaluates published research, client perspectives, and perspectives of professionals. Following the framework of evidence-based practice, responses of two groups of participants were analyzed to determine essential factors for successful apps: potential clients and professionals. Both groups of participants self-administered all three hearing screening apps and were surveyed over the apps’ accuracy, user-friendliness, and ability to explain results. Additionally, professional participants were interviewed to gather additional information about specific factors clinicians preferred overall in all the apps.

Potential clients and professionals’ survey results indicate that both potential clients and professionals agree that a successful app that ranks higher must be user-friendly and accurate. Professional participants reported that more explicit instructions, an audiogram summarizing results,

and more accessible features for people with disabilities would help improve the perceived success of the apps. Both potential clients and professionals agree that the apps are accurate enough to call “hearing screenings.”

JULIE NEMEC

Radiation Therapy

Exploring Movement During Radiation Therapy Treatment

Abstract:

Patient movement is a major part of radiation treatment. This poster will focus on different studies that were completed on how different tumor locations, immobilization device techniques, and motion detection devices can affect treatment.

ALEXIS MARTINEZ

Health Professions

What's in Your Genes?-The Impact of Family History in Current and Future Generations of Cancer Patients

Abstract:

Everyone has a family history. . . Do you know yours? The purpose of this essay is to inform our current and future generation cancer patients with how a better understanding of their family history could impact their lives. “Family history is the gateway to the decision whether or not to pursue genetic testing; until genetic testing becomes routine for every patient, the family history remains vital.”¹ Methods used in this paper include Texas State research database, as well as the Texas Oncology website. Additionally, the intentions of this research is to provide these patients with a knowledge of “why” they may be getting cancer without any other reasonable cause, give them resources on preventative health/avoidable behaviors if at a greater risk, and ways to learn about

LAURA VEGA

Health Professions

The Importance of Imaging and Fusion in Radiation Therapy

Abstract:

Imaging has always been an essential role in the radiation oncology field. The main purpose of this research paper is to explain different imaging and how it is used before a patient goes through treatment and while they are receiving treatment. This paper goes into detail on what imaging is needed for the treatment planning process and once the treatment plan is created, what imaging is used to precisely deliver treatment to the patient; as well as the different imaging modalities we have today and their use in the radiation oncology field. This information was gathered through various articles from the red journal and two radiation textbooks that are important in the radiation oncology field. This research paper will explain the importance of imaging such as, the fusion of multiple imaging modalities and also how it helps in treatment planning with different imaging such as four-dimensional computed tomography (4DCT) scans in which captures the shape and trajectory of organs moving during breathing. Today, linear accelerators have the capability to take images to ensure patients are in the same position every day. The ability to fuse different images with

computed tomography (CT), magnetic resonance imaging (MRI or MR), positron emission tomography (PET) and many more allows for successful treatment plans for cancer patients.

AMBER SMITH

Radiation Therapy

Exploring the Role of Anesthesia in Pediatric Radiotherapy

Abstract:

This research paper's purpose is to be able to help inform other health care professionals in the oncology field about what truly goes into giving a pediatric patient anesthesia for their daily radiation therapy treatments. This research is intended to explore the risks, side-effects, radiation therapist's role's when treating pediatric cases, and where virtual reality is headed in hopes of reducing the need for anesthesia daily.

BRYSON WRIGHT

Radiation Therapy

IORT

Abstract:

To explain if IORT is a better or worse treatment choice for patients. Show if IORT affects some cancers better than others. Lastly I would like to share my knowledge with other therapists, so they have a better understanding of what IORT is.

SOMER WASHINGTON

Radiation Therapy

Exploring Quality of Life in Head and Neck Cancer Patients

Abstract:

Purpose: While radiation therapy produces significant side effects to particular treatment sites, head and neck cancer patients seem to often have some of the worst side effects during and post treatment. The goal of this research is to explore exactly what these patients are going through such as the physical, cognitive, psychological, and social aspects of quality-of-life and determine if there is a way to help minimize these reactions.

ANTIONETTE RIVERA

Nursing

Giving to the Giver: A Research Proposal on Implementing Donor Nutrition Education to Promote Healthier Options in the Foodbank

Abstract:

Objective: To increase the nutritional value of donations given by donor organizations to the Food Bank based on a Red-Yellow-Green (RYG) scale. Background: Food banks have been planted across the Southeastern Virginia region to help with the prevalent issue of food insecurity. The food bank receives various food donations. The goal, however, is to implement education to the donor organizations to improve the nutritional value of the donations based on the Red-Yellow-Green scale. Participants and Methods: A Quasi-Experimental Before-and-After design across multiple groups will be used. Consistent donor groups will be selected for the intervention and baseline

donations will be monitored for a month based on health value. After the first month, the one-week education intervention will be implemented. Donations from the donor organizations will, then, be monitored for an additional month. Finally, the nutritional value of the donations will be assessed based on the RYG scale. Analysis: The data will be analyzed using the central tendency method of descriptive statistics. A paired T-test will determine whether there was a statistical difference pre- and post-intervention, which will infer the impact of nutrition education on the quality of donations presented by the organizations. Results: There is an expected increase in the amount of green donations and decrease in the amount of red donations received by donor organizations. Limitations: Limitations of this study include the trial period, season, convenience of items, selected sample size, and finances.

KRISTEN GONZALEZ

Radiation Therapy

Barriers that Affect the Sexuality of Cancer Patients

Abstract:

This research will explore obstacles and insecurities that patients face with their sexuality throughout their course of treatment. Delineation of gender and types of cancer will be used throughout this paper to compare emotions and/or responses between the different groups. The study discusses barriers that limit patients: symptoms, vulnerability to the topic, and lack of communication. Ways to overcome these barriers will be explored throughout the different groups based on the patient's needs. The research provides a better understanding of the emotions and situations that patients deal with outside of the treatment room, regarding their sexuality. The purpose of this paper is to enlighten a situation that is often overlooked by the patients and/or healthcare workers.

MARIEL LEWIS

Radiation Therapy

Exploring Hyperbaric Oxygen Therapy and its Effects in Radiation Oncology

Abstract:

Background: This literature review explores the various uses of hyperbaric oxygen therapy in radiation oncology while also discussing whether it is effective in treating and healing radiation therapy patients. The main uses of hyperbaric oxygen therapy discussed will be the technique of using this treatment as a radiosensitizer or as adjunctive therapy for radiation therapy patients, as well as hyperbaric oxygen used as a healing agent to combat radiation induced side effects and toxicity.

Methods: This literature review includes materials from the online library database at Texas State University, medical journals with relevant information on hyperbaric oxygen therapy and oncology and case studies pertaining to this review.

Purpose: The purpose of this literature review and the research provided in it is to explore further into the techniques and methods that hyperbaric oxygen therapy can be applied to radiation therapy patients and inspect its efficacy in these scenarios. The main focus of this research will be upon hyperbaric oxygen therapy as a healing agent for radiation induced side effects and radiation toxicity in various radiation oncology patients as well as in different body parts. It will have a smaller focus on the utilization of hyperbaric oxygen as a sensitizer and an adjunctive therapy for radiation treatment plans. A brief introduction to the history of hyperbaric oxygen and its role in the medical community will also be provided.

Conclusion: The uses of hyperbaric oxygen therapy have been studied for a large span of time, with

continual research presently being executed. While hyperbaric oxygen therapy does have potential benefits for radiation oncology, it has not been thoroughly proven to be a vital asset in the treatment process of radiation therapy patients. Additional research will be needed in order to make hyperbaric oxygen therapy a common practice among radiation oncology or alternatively to completely rule it out as a beneficial alternative form of adjunctive therapy.

LESLIE NAVA

Radiation Therapy

A Comparison of Technical Aspects of Intensity Modulated Radiotherapy Treatment (IMRT) vs. Stereotactic Body Radiation Therapy (SBRT) For the Treatment of Prostate Cancer

Abstract:

This report is to comprehend the technical differences between Intensity-Modulated Radiotherapy and Stereotactic Body Radiation Therapy in order to show which is more advantageous when treating the prostate.

REYES NINO

Radiation Therapy

Exploring Expenses of Radiation Therapy Treatment and Financial Toxicity

Abstract:

This literature review has been written regarding the issues related to the expenses related to patients going through a course of radiation therapy treatment. The focus is to better understand the financial toxicities faced by many patients undergoing treatment. The conclusive goal is to study the efforts being established to save our patient financial stress while ensuring an equal likelihood at survival and quality of life. This topic has significant importance because many patients have difficulties affording the treatments they undergo. It's not fair for a patient to have to skip out of buying groceries or other expenses in order to afford the cost of their radiation therapy treatments.

LAUREN STEVENSON

Radiation Therapy

Outcomes of the Integration of a Low Carbohydrate Diet Concurrently with Radiation Treatment for Gliomas

Abstract:

Purpose: Throughout the past decade, low carbohydrate diets have become a well discussed topic in regards to their role in the treatment of gliomas undergoing radiation therapy. There are several diets that are prescribed by doctors that emphasize low carbohydrate intake, but slightly differ in regards to certain foods allowed. This research is to determine the differences outcomes between the standard American diet and a low sugar/carbohydrate diet. The longevity and overall health of these patients will also be researched in this project.

Methods: Peer-reviewed articles, human clinical trials, animal clinical trials, and online references.

Results: The integration of this specific lifestyle change has been proven to prevent stimulation of growth factor hormones, reduce edema and inflammation around tumor in the brain and improve quality of life for these patients.

SABRINA YZAGUIRRE

Radiation Therapy

Exploring the Development of Mental Health and Wellbeing Throughout A Cancer Patient's Care

Abstract:

This manuscript will consider the various types of mental illnesses that can be found within the course of a cancer patient's treatment. This research will also examine how a patient's mentality can either boost or cripple a patient's quality of life. Some of the mental illnesses that will be explored are primarily depression and anxiety. Several methods of support systems and beneficial coping mechanisms will also be regarded.

ABBIE JUDD

Radiation Therapy

How Radiation Oncology Plays A Role In Pain Management Amongst Cancer Patients

Abstract:

The following manuscript will outline the topic of pain management in the radiation oncology field. There are three different types of pain that effect the body and with pain assessment physicians can narrow down how the pain should be treated. Treatments of pain can vary from medications and therapies. Even with detailed reports of pain assessment and access to pain management resources many patients are left under treated. Research shows that pain can be under treated due to several different barriers. Each member in the radiation oncology team plays a vital role in each patients pain management and has the goal to provide high quality care.

NICHOLAS MARTINEZ

Radiation Therapy

Radiation Induced Malignancies and Side Effects: Radiobiology, Treatment Modalities and Imaging Techniques

Abstract:

This research will inform and provide a better understanding of the ionizing radiation being used to treat and image patients, how it is benefiting them verses how much it maybe harming them. By effectively expressing the dangers of radiation and the significant difference in various treatment modalities and imaging techniques being used today, will help raise awareness to what is/is not acceptable.

ALICIA HERNANDEZ

Radiation Therapy

Exploring the Benefits of Radium-223 and Bone Metastases.

Abstract:

The purpose of this research paper is to provide patients and future patients knowledge on a treatment that could potentially be in their future care plan. In this manuscript, we will get an inside look, step by step, on the delivery process of this radioactive isotope. The world of medicine is advancing expeditiously, leaving patients unaware of different pathways of treatment. Radium-223 has beat adverse life expectancies, provided relief, and has allowed these patients to live their last

days with ease and comfort. This paper gives the readers another choice of treatment by providing the effects radium-223 can have on bone metastases and the successes that have followed it.