جامعة الكويت
KUWAIT UNIVERSITY

Faculty of Allied Health Sciences

17th Scientific Poster Day

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Under the Patronage of President of Kuwait University

Prof. Nawaf AlMutairi

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Dean's Message

Dr. Mohammad Nadar

Acting Dean

Welcome to the 17th Annual Student Poster Conference of the Faculty of Allied Health Sciences. This event highlights the hard work and scholarly spirit of our senior students, as well as the dedication and support of our esteemed faculty.

To our senior students, congratulations on your exceptional research projects. Your curiosity, commitment, and determination have resulted in the inspiring work we see today.

A sincere thank you to our faculty members and research mentors. Your expertise and encouragement have been essential in guiding these research projects. Your dedication to fostering a learning environment is deeply appreciated.

As we celebrate today's achievements, I encourage all students to view this conference as the foundation for their career journey as future researchers and lifelong learners. The field of health sciences is constantly evolving, and your ongoing curiosity and pursuit of knowledge are crucial to becoming a successful health care professional.

Collaboration and interdisciplinary approaches are essential to addressing the complex health challenges we face. I therefore urge you to build strong networks and engage in collaborative projects, welcoming the diverse knowledge and perspectives that enrich our health sciences.

Thank you all for your contributions to making this conference a success. Let's continue to strive for excellence and make meaningful advancements in our health sciences fields.

Congratulations and best wishes for your future endeavors.

Mohammed Sh. Nadar, PhD, OTR
Acting Dean, Faculty of Allied Health Sciences
Kuwait University

Vice Dean's Message

Dr. Rana AlAwadhi

Acting Vice Dean for Research and Postgraduate Studies

Greetings!

Dear colleagues, researchers, and dear students.
On behalf Faculty of Allied Health Sciences, as the Vice Dean of Research & Postgraduate Studies, I would like to express my sincere gratitude and welcome you to the 17th Scientific Poster Day.

I hope that this year, too, the Scientific Research Poster Day would be able to achieve its objective in providing an effective platform for academicians, researchers, and practitioners to advancing knowledge, research, and technology for humanity. Though our accomplishments are never sufficient in this wide world of knowledge, we would continue to be part of this significant drive of participation and exchange of ideas, hoping that it would benefit our community as a whole. In short, presenting your poster is a chance to showcase your research, receive feedback, and connect with peers. Please do embrace the opportunity, be welcoming and enthusiastic, and enjoy the experience of sharing your work with others.

At this opportunity, let me thank the Dean of the Faculty, the Organizing Committee members of the 17th Faculty of Allied Health Sciences Scientific Poster Day, the Scientific Committee members, the Faculty members, the support staff, and the Kuwait University Administration for making this year's event a success.
Wishing all participants all the very best in their future endeavors.

Best Regards,

Dr. Rana Al-Awadhi
Acting Vice Dean for Research & Postgraduate Studies
Faculty of Allied Health Sciences

Health Informatics and information Management (HIIM)

HIIM Awards

No.	Name	Title	Poster
1	HIIM-2 Amani Alrasheedi	The Perception of Healthcare Professionals on the Role of Health Information Management Professionals during Covid-19: Kuwait Experience	View

Knowledge of E-health concepts among students in Allied Health Sciences

Wejdan Almutairi
Supervisor: Dr. Abdulmajeed Alhashim
Faculty of Allied Health Sciences, Health Informatics and Information Management Department

Introduction:
e-health is the use of digital technologies and telecommunications, such as computers, the Internet, and mobile devices, to facilitate health improvement and health care services and its play critical role in the healthcare organisation's so we as a future workforce have to prepare and explore the EHR.

Methods:
•Survey development and validation.
•Context and data collection
•Analysis

Result:
It is assumed that the outcome of the students targeted for the study will be rich in information and knowledge because they are final-year students and have gone through clinical experiences.

Discussion and conclusions:
This study will be evidence of the extent to which students have learned in clinical courses and whether they need to add an introductory curriculum to e-health.

Keywords:
Electronic health records Education, Barriers, Challenges
Adoption, Knowledge, Computer literacy

Poster

The Perception of Healthcare Professionals on the Role of Health Information Management Professionals during Covid-19: Kuwait Experience

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Maha Alnashmi [1]

[1]Health Informatics and Information Management /Faculty of Allied Health Sciences, Kuwait University

INTRODUCTION

The COVID-19 pandemic brought unprecedented challenges to healthcare systems worldwide, underscoring the critical role of Health Information Management (HIM), particularly within the medical record department. HIM professionals played a vital role in ensuring the efficient organization, security, and accessibility of patient information during this crisis.

METHODS

It is a descriptive research to evaluate the effectiveness of Health Information Management Professionals during Covid-19; Kuwait Experience . A self-developed questionnaire will be used, and the target population are Health Care professionals in Farwaniya hospital including age between 20 and 70 for both Male and female . The estimate of sample size is 120 . The significance of the research is to elevate the awareness of the role of the Health Information Management Professionals within healthcare organizations .

RESULTS

The Health Information role during Covid-19 is expected to be effective since the professionals are acquainted with managerial skills , medical record Sciences Knowledge , and statistical analysis .

DISCUSSION & CONCLUSION

This research will highlight the role of Health Information Management in Facility Changes remote work, shifting priorities, and personal stressors .HIM professionals will be ready to step into new roles in data analytics, research and development, compliance, information governance, project management, and process improvement.

KEYWORDS:
HIM professionals , Covid-19 , Pandemic

Poster

Online learning during COVID-19 pandemic: Perception of Allied Health Sciences undergraduates in Kuwait University

Author: Afnan Helal

Supervised by: Dr. Elham Al-Dousari

Introduction

The spread of COVID-19 poses a threat to humanity, as this pandemic has forced many global activities to close, including educational activities. To reduce the spread of the virus, education institutions have been forced to switch to e-learning using available educational platforms, despite the challenges facing this sudden transformation. The purpose of this research is to investigate the perception of Allied Health Sciences undergraduates toward online learning during COVID-19 outbreak in Kuwait.

Research Aim/objectives:

To explore the perceptions of Allied Health Sciences undergraduates towards online learning during COVID-19 pandemic and to identify the challenges associated with it. The information obtained here will be important in the future for the design and delivery of effective online education systems for Allied Health undergraduates in Kuwait University, Kuwait.

Methodology

A self-developed questionnaire will be administered to a sample of approximately 120 students, aged 19-26 (male and female). The study aims to identify their viewpoints on online learning experiences and explore both the challenges and benefits they perceive.

Results:

Our analysis found that 70% of undergraduate students were satisfied with e-learning during COVID-19, while 30% were unsatisfied. Positive aspects of online learning implementation emerged, with students reporting convenience, good communication with instructors, flexibility, and effectiveness in meeting educational goals.

Furthermore, the data indicates a preference for flexibility: 75% felt e-learning offered more flexibility and time savings compared to traditional learning.

Conclusion:

This study explored the perceptions of Allied Health Sciences undergraduates towards online learning during the COVID-19 pandemic. The findings suggest that e-learning can be an efficient and time-saving learning strategy. While online learning proved essential during the pandemic, it's important to acknowledge the value of a blended approach that incorporates the benefits of both online and in-class instruction.

Keywords:

Pandemic, E-learning, COVID-19

Poster

Medical Laboratory Sciences (MLS)

MLS Awards

	No.	Name	Title	Poster
1	MLS-30	Silin Elzeyn	The possible involvement of JAK2/STAT3 pathway in doxorubicin	View
2	MLS-20	Afnan Alharby	Epidemiology of infections linked to dermatophytes in Kuwait: a retrospective study	View
3	MLS-35	Farah Alshammari	The Effect of Metformin on Vitamin B12 Levels Among Patients With Type 2 Diabetes Mellitus	View
4	MLS-03	Hajar Alsanafi	Exploring Blood Glucose's role in predicting COVID-19 patients' mortality: A Retrospective Study	View

MLS-01

Nasal Colonization in Surgeons: A Hidden Source of Surgical Site Infections

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INTRODUCTION

It was evidential that different types of environmental bacteria reside on nasal atria of surgeons with clinical practice that is no less than 3-5 years. Most of the strains were common habitats of different animals not humans and some were reported to be clinically significant. Nasal carriage of surgeons is an underestimated source of SSIs. Absence of surveillance and routine nasal swabs was evident. Nonetheless, all participants indicated that they weren't introduced of using mupirocin as decontamination mean. The absence of Staph. aureus which raised the question. Yet, lack of data due to limitation of time and resources was the mainstream barrier to answering such questions.

METHODS

The study involved taking nasal swabs from surgeons with different clinical experiences and hygiene practices (questionnaires). The swabs were inoculated, and bacteria were identified with Api systems.

RESULTS

Interestingly, none of the samples showed any growth of Staph. aureus, Staphylococcus epidermidis (Staph. epidermidis), Streptococcus pneumoniae (Strep. Pneumoniae) 0 (0%). The most isolated bacterial strain was Micrococcus spp. and Flavimonas oryzihabitants (Flavi. oryzihabitants) 6 (37%).

CONCLUSION

Nasal carriage of surgeons is an underestimated source of SSIs. Absence of surveillance and routine nasal swabs was evident Questionably, the surgeons did not have any contact with any animals. Another finding is the absence of Staph. aureus which raised the question. Yet, lack of data due to limitation of time and resources was the mainstream barrier to answering such questions. For future word whole genome sequencing

KEYWORDS

Nasal swabs, Surgeons, Microbiologic identification

Poster

MLS-02

Relationship of ER and PR to HER2 protein in breast cancer

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Supervisor: Dr. Maisa'a Alwohhaib
Department: MLS

Breast cancer has been known as the foremost reason of cancer death within women population and the reason of women's death in Kuwait with 631 new cases in 2019, furthermore it's the most common cancer of all cancers in Kuwait. Breast cancer classified into three subtypes and this classification based on the state of the breast cancer biomarkers, they are Hormone Receptors Positive/HER2 Negative breast cancer and it's accounting the majority of the cases with 70%, the second subtype is HER2 positive breast cancer and accounts around 15-20%, the third subtype is Triple negative breast cancer (TNBC), it's exhibit an aggressive behaviour among the subtypes of breast cancer and accounts for 15%. This study was done to explore the association between estrogen and progesterone receptors (ER and PR) to human epidermal growth factor 2 (HER2) in breast cancer. The data for breast cancer cases was provided from Kuwait Cancer Control Center and was analyzed using Microsoft excel. This study was conducted on eight patients diagnosed with different grades of breast cancer. The hormone receptor status of estrogen, progesterone, and HER2 was previously determined by Immunohistochemistry. The collected data results from patients in Kuwait showed that the majority (50%) of the patients were ER/PR positive and HER2 negative, (37.5%) were negative for all the biomarkers which means they have TNBC, and (12.5%) was positive for all the biomarkers. Accordingly, from these results it was found that the relationship between ER and PR to HER2 is variable. In addition, it was found from the data provided that the relationship between the three biomarkers of breast cancer notably ER, PR receptors and HER2 cannot be considered as a consistent relationship, and it's not strongly identified. Identification of ER, PR, and HER2 status is crucial for the treatment plans and prognosis for the patients.

Keywords
Breast cancer, biomarkers, HER2 protein, estrogen receptor, progesterone receptor.

Poster

Exploring Blood Glucose's role in predicting COVID-19 patients' mortality: A Retrospective Study

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Background. COVID-19 is a pandemic disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). It has varying clinical symptoms that could range from showing no symptoms to experiencing severe symptoms, causing ICU admission and death. Diabetes appears to be a significant underlying health condition contributing to poorer outcomes in COVID-19 cases.

Aim. was to study and explore the features and results of Diabetic patients suffering from COVID-19 in Kuwait.

Methodology. This was a single-center retrospective research looked at COVID-19 patients allowed entrance to Jaber al-Ahmad Hospital for a Three-months period between February 24 and May 24, 2020. A group of 417 individuals was analyzed, and their medical data, including medical history, symptoms, and test findings, were reviewed. The study focused on type 2 diabetes patients and utilized logistic regression to assess underlying comorbidities in relation to primary outcomes. Significant predictors were established at a P-value of <0.05. Variables were analyzed linearly or dichotomously according to fasting plasma glucose levels. Logistic regression model was used to calculate odds ratios for death, with age and blood glucose turned into ordinal variables.

Results. Patients with diabetes were found to have higher rates of ICU admission and mortality rates than non-diabetic patients. Logistic regression analysis revealed that each one mmol/L elevation in FBG in patients with COVID-19 is linked to a value of 1.52 (95% CI: 1.34–1.72, $P < 0.001$) times the probability of death from COVID-19.

Conclusion. COVID-19 outbreak has brought attention to the influence of comorbidities such as diabetes on the severity of the disease, which significantly makes COVID-19 outcomes worse. Understanding the reasons behind these findings could help manage and improve outcomes in such cases.

KEYWORDS:

Covid-19, SARS-CoV-2, Diabetes Miletus

Poster

MLS-04

Investigating the Role of Thyroid Hormones in Type 2 Diabetes Mellitus

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INTRODUCTION
One prevalent chronic endocrine problem that frequently coexists with Type 2 Diabetes Mellitus (T2DM) is thyroid disease. Studies have shown that individuals with T2DM have greater rates of thyroid problems than the general population. Furthermore, patients with hyperthyroidism are at increased risk of developing T2DM. It has been reported that hyperthyroidism impairs glycaemic control most probably through elevated hepatic glucose production. The aim of this study was to investigate whether thyroid hormones impacted glucose profiles through performing correlation analysis with biochemical parameters.

METHODS
Our retrospective study included 40 participants aged ≥21 of which 20 were diagnosed with T2DM and 20 without T2DM. Clinical, and laboratory data including fasting blood glucose (FBG), glycated hemoglobin (HbA1C), insulin as well as thyroid hormone profiles; thyroxine (FT4), triiodothyronine (FT3) and thyroid stimulating hormone (TSH) were obtained from medical records.

RESULTS
In our study we observed a positive correlation between FT4 and HbA1C in nondiabetic plasma. Conversely, there was a negative correlation between FT3 and FBG in nondiabetic plasma. In diabetic individuals, a positive correlation was detected between thyroid hormone profiles (TSH, FT3 and FT4) and FBG. Furthermore, in diabetic plasma there was a negative correlation between FT3 and HbA1c whereas there was a positive correlation between TSH and HbA1c. FT4 inversely correlated with insulin levels in diabetic plasma.

CONCLUSION
Our data shows that thyroid hormones have similar effects on FBG and opposing effects on HbA1C in diabetic plasma. This suggests that thyroid hormones may impact glycaemic control in additional mechanisms unrelated to glucose levels. It must be noted that correlations observed in this study were not statistically significant and larger studies are warranted to draw definitive conclusions. Overall, we recommend that diabetic patients regularly check their thyroid hormone profile in order to avoid elevations in glucose that could possibly worsen hyperglycaemia and increase the risk of diabetic complications.

KEYWORDS:
Type 2 diabetes mellitus, thyroxine, fasting blood glucose

Poster

MLS-05

The antibacterial potential of colistin-resistant Escherichia coli isolated from urinary tract infection

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INTRODUCTION

The overuse of the antibiotics has led to a huge problem, which is the spread of antibiotic resistance bacteria. This problem is also facing Kuwait in many settings including hospitals, by which clinically significant bacterial strains are spreading without control. Therefore, new antibiotics are urgently needed. Therefore, the aim of the research was to discover novel antibiotics from Ecsherichia coli C91.

METHODS

E.coli C91 was grown under different culture conditions using different broth (Nutrient broth, Tryptic soy broth and Luria bernati broth) and different time point (24 and 48 hours) they were tested using agar well diffusion assay. Then the whole genome sequence of E.coli C91 was uploaded in antiSMASH and the results were analysed.

RESULTS

Bioinformatics analysis showed that there are two biosynthetic gene clusters in the whole genome sequence of *E. coli* C91. One of them is likely to produce an already existing compound, which is 100% identical to other compounds in the database. The other BGC appears to carry proteins that can produce a compound that is saccharide in nature is likely to be novel since is not 100% identical to any compound. Moreover, it is also predicted to be a thiopeptide secondary metabolite.

CONCLUSION

This study found that E. coli C91 has the potential to produce antibiotics through bioinformatics approach. Its likely that this strain can produce a novel thiopeptide, which has never been predicted in the WGS of a colistin-resistant E. coli strain originating from a urine sample. However, the culture-based approach showed that it was not producing antibiotics in vitro against pathogenic S. aureus and Acinetobacter baumannii.

KEYWORDS:
E.coli C91, antibiotic resistance , novel secondary metabolite

Poster

MLS-06

Investigating fibrous profiles within the stromal microenvironments of tumors across diverse cancer varieties

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INTRODUCTION

Solid tumors primarily comprise tumor cells along with the tumor microenvironment (TME), which encompasses diverse cellular elements including fibroblasts, endothelial cells (ECs), immunocytes, adipocytes, and an acellular component referred to as the extracellular matrix (ECM). Within the TME, particular attention is directed towards the ECM, especially its fibrous components such as collagen, which play a crucial role in cancer advancement. Hence, this project is centered on investigating the stromal collagen characteristics of the ECM by analyzing its structural variances across breast, colorectal, and prostate cancer types.

METHODS

To accomplish the objective of this project, retrospective data pertaining to 31 patients diagnosed with breast cancer, 31 patients diagnosed with colorectal cancer, and 30 patients diagnosed with prostate abnormalities were obtained from records at Amiri Hospital. Formalin-fixed paraffin-embedded (FFPE) tissue samples, archived from these patients, were collected, processed, and subjected to staining using two histochemical agents: Masson trichrome and Hematoxylin and eosin. Subsequently, a pathologist examined the slides under a microscope, meticulously documenting any observed variances in the structural arrangements of collagen within the stroma of the tumors.

RESULTS

Among the examined breast cancer tissue samples, it was observed that distinct stromal collagen organizations were evident across different breast cancer molecular subtypes. Luminal A and luminal B subtypes exhibited structured and dense collagen arrangements, whereas HER2 and triple-negative subtypes displayed disorganized and less compact collagen structures.

In colorectal cancer tissues, no discernible structural disparities in collagen were observed between samples obtained from either the left or right side of the colon. However, when comparing tumor grades, low-grade tumors demonstrated a more organized collagen arrangement compared to high-grade tumors, which exhibited a chaotic collagen disposition devoid of parallel bundles.

Regarding prostate cancer tissues, patients with elevated levels of serum prostate-specific antigen (PSA) exhibited thick and dense collagen structures within the tumor stroma, contrasting with those with lower serum PSA levels.

CONCLUSION

These findings suggest that evaluating collagen structure alongside other established biomarkers such as molecular subtype, serum biomarker levels, and tumor grade could serve as a valuable tool in enhancing the diagnosis and treatment of various cancer types.

KEYWORDS:
Cancer, Microenvironment, Collagen

Poster

MLS-07

Sbi secreted by Staphylococcus aureus increases Cavin-1 expression in Normal Human Epidermal Keratinocytes

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Background: Atopic dermatitis (AD) is a chronic inflammatory skin condition characterized predominantly by a type 2 immune response. The pathogenesis of AD is complex, influenced by an array of genetic and environmental factors. Staphylococcus aureus (S. aureus) is an environmental factor colonizing AD skin leading to recurrent inflammation. A virulence factor secreted by S. aureus known as second immunoglobulin binding protein (Sbi) induces the release of IL-33 from normal human epidermal keratinocytes (NHEK). IL-33 is an epidermal pro-type 2 cytokine crucial in the initiation of type 2 immunity in AD and its mechanisms of release have not been fully investigated. Polymerase transcription and release factor (PTRF) also known as Cavin-1 is a member of caveolae, which are tiny invaginations in the plasma membrane that are involved in a variety of cellular functions, including signal transduction. PTRF/Cavin-1 has been linked to the release of IL-33 from non-keratinocyte cultured cells. The aim of this study was to investigate whether PTRF/Cavin-1 was involved in the extracellular release of IL-33 from NHEK. **Methodology**: NHEK were co-cultured with Sbi obtained from the Filtered Supernatant of Newman S. aureus and Filtered Supernatant of ΔSbi S. aureus, which did not contain Sbi. PTRF expression in NHEK lysates and extracellular IL-33 release in NHEK conditioned media were measured by ELISA. **Results**: Sbi significantly induced IL-33 release from NHEK compared to untreated NHEK ($p<0.0001$). Conversely, ΔSbi did not induce IL-33 release from NHEK. Sbi significantly increased PTRF expression levels in NHEK lysates ($p<0.0001$). On the other hand, no significant differences were observed when keratinocytes were treated with FSA-ΔSbi in comparison with untreated NHEK. **Conclusion**: our study suggests that PTRF is involved in the Sbi/IL-33 pathway given that upregulated PTRF expression in Sbi-treated keratinocytes aligned with increased IL-33 release. Elucidating the molecular mechanisms of PTRF involvement may help limit IL-33 release, thus limiting inflammation in AD patients.

KEYWORDS:

Atopic dermatitis, IL-33, Polymerase transcription and release factor, second immunoglobulin binding protein, Keratinocytes

Poster

MLS-08

Domiciliary vs Tertiary care Nebulizers in terms of Microbial Contamination

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Background: Nebulizers are used for different medical cases at homes and in hospital setting. Despite of their benefit, these tools can be a silent means of infection. Especially if there is lack of proper decontaminant means. This study targets to focus the light of microbial contamination of hospital and domestic nebulizers.
Objective: To compare between hospital and home-based nebulizers in terms of microbial contamination.
Methods: Swabs taken from four different hospital nebulizers and four domestic nebulizers were taken and processed for microbiologic identification (Vitek II system, Api identification, and antimicrobial susceptibility testing-AST were performed).
Results: Gram-positive bacteria was isolated from AlAdan hospital and Jaber, while one Gram-negative strain was isolated from AlRumaithiya clinic. On the other hand, Gram-positive filaments and Gram-positive bacteria was witnessed among swabs collected from domestic nebulizers. AST results showed sensitivity towards ß-lactam drugs with their inhibitor. With striking resistance of bacteria collected from domestic nebulizers against ß-lactam, quinolones, and linozides.
Discussion:Overall, higher resistance spectrum was seen amongst bacterial strains isolated from home-based nebulizers than hospitals. In fact, one hospital ‘’Amiri” was sterile and free of bacterial contamination. Nonetheless, decontamination means followed by Amiri hospital should be issued as a protocol for all other hospitals and followed by individuals using domestic nebulizers. The finding of resistance amongst bacterial isolates from home nebulizers form a potential risk of infection especially for those who are immunocompromised using these tools.
Conclusion: the hypothesis ruling the society of domestic nebulizers being with less contamination than hospital ones is proven wrong from the results within. It might be due to proper decontamination means followed regularly by hospital, while homes do not follow any specific protocol for home-based nebulizers due to single-individual use. More studies should be performed on higher number of samples with surveys indicating means of decontamination followed at both premises.

KEYWORDS:
Nebulizers, Domestic, hospital, Actinomyces, Streptococcus pneumoniae

Poster

MLS-09

Dialysis water: a Reservoir of Waterborne Infections in Hemodialysis

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Department of Medical Laboratory Sciences , Faculty of Allied Health Science , Kuwait University

Patients with certain kidney diseases and failure need routine dialysis, while that they're exposed to large volumes of water from dialysis machines. These water sources were reported to be a source of infection. Different studies indicated the association of Gram-negative bacilli with infections waters of dialysis machines (hemolysates). The in fact of the contamination of these water sources that should be sterile is fatal. As these impose as serious infectious threat to immunocompromised hosts receiving regular dialysis. These dormant sources of infection could impose a bigger threat when the contaminants are antimicrobial resistant. Identification of sources of infection and protocols for their surveillance with regularly published protocols of decontamination is a must for maintained of public health. Microbiologic assessment of water from haemdialysis machines. Sample were taken from different dialysis centers by specialized staff and assessed in Kuwait University Microbiology laboratory. The samples were collected in mediums containing sodium thiosulfate to dilute the effect of chlorohexidine present in dialysis machines that might affect counts of isolated contaminating bacterial strains. Sub-cultures and colony count techniques were performed for identification to learn infectious levels of contaminating bacteria. Due to obstacles faced from ethical committee, some centers from which we collected hemodialysis's will be referred anonymously. Interestingly, 2 out of 7 water samples showed growth of Gram-positive bacilli *Diphtheroid* spp. only. Other dialysates collected from other centers showed lower counts than the levels considered as infectious (<200 colonies CFU/mL). Despite of obstacles faced in terms of sample collection and ethical approval, promising research results can only be sought by young researchers and collaboration of multi-disciplinary team in healthcare systems. This research proves the importance and necessity of ongoing surveillance of water sources supplying dialysis centers in Kuwait and hemodialysis from their dialysis machines. Decontamination protocols should be followed.

KEYWORDS:
Hemodialysis , Dialysate , Diphtheroid , Gram positive bacilli

Poster

MLS-10

Elimination of colistin-resistant Escherichia coli using essential oils

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Faculty of Allied Health Sciences

INTRODUCTION

The remarkable increase in the spread of antibiotic resistant bacteria has diverted researchers to investigate the possible antimicrobial effects of essential oils. Some of the essential oils available, including tea tree oil, is previously shown to have antimicrobial properties. This research aimed to discover the antimicrobial effects of six commercially available natural oils; peppermint oil, onion oil, tea tree oil, black seed oil, aloe vera oil and eucalyptus oil.

METHODS

They were tested in two states; as a pure form and mixed form, against colistin-resistant Escherichia coli C91. Agar-well diffusion method was used in this study to evaluate the antimicrobial properties of the tested oils. In addition, susceptibility of E. coli to a panel of antimicrobials was tested using disc diffusion assays.

RESULTS

Escherichia coli C91 showed sensitivity towards one out of six essential oils, which was eucalyptus oil. Staphylococcus aureus, which was used in this study as a positive indicator bacterium, showed sensitive towards two essential oils; blackseed, and eucalyptus oil.

CONCLUSION

After evaluating the results of these pure tested oils, a combination of two oils; Eucalyptus oil and blackseed oil were tested against two bacterial strains. A synergistic effect of the mixed oil was observed in Staphylococcus aureus, on the other hand, an antagonistic effect of oils mixture was observed in E. coli C91. Therefore, eucalyptus oil and blackseed oil were shown to be significant sources of antimicrobials against clinically significant antibiotic-resistant bacteria.

KEYWORDS:

colistin-resistant Escherichia coli, Agar-well diffusion, essential oils.

Poster

MLS-11

The Importance of Community-Based Surveillance of *Toxoplasma gondii* in the Middle East

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INTRODUCTION

Toxoplasma gondii is an obligate intracellular protozoan. The parasite can be transmitted to humans mainly from ingestion of oocysts shed by cats through various sources or ingestion of tissue cysts within tissue of infected animals. Transmission of the parasite through the placenta can also occur with infected women. Although toxoplasmosis in immunocompetent individuals is usually asymptomatic, it can cause severe health issues in immunosuppressed patients and neonates of infected mothers. The prevalence of toxoplasmosis is believed to vary between 10-90% globally.

MAIN BODY

This project aims to evaluate the prevalence of toxoplasmosis and the health burden in the Middle East among high-risk groups. Our findings highlighted the high prevalence of toxoplasmosis in the Middle East region, mainly among pregnant women (37%) where most of the studies focused on, and HIV positive patients (46%). Moreover, the lack of studies in the field with other vulnerable groups of the population in the region, including neonates, other immunocompromised patients, and those with psychoneurological disorders, might affect the bigger picture. In addition, a high prevalence of toxoplasmosis in Gulf countries was reported in different paratenic hosts that can possibly transmit the disease to humans such as felids (43%), sheep (48%) and camels (21%). Food-borne transmission of toxoplasmosis might be one of the most common routes of transmission in the region and future studies should confirm the presented findings. Studies of pregnant women in Kuwait vary, the prevalence of *T. gondii* was between 13% and 41%. No data on the prevalence in other population groups to understand the health burden of toxoplasmosis in Kuwait. Risk factors that could be associated with latent toxoplasmosis should be considered by the public health officials in Kuwait as endemicity of toxoplasmosis is possible affecting vulnerable groups.

CONCLUSION

Toxoplasmosis is a public health concern in the Middle East and applying a One health approach is recommended as an interdisciplinary way to prevent and control toxoplasmosis. *T. gondii* can affect humans, animals, food industry and environmental health, therefore encouraging such an approach to tackle all these targets is useful in managing the disease in the region.

KEYWORDS:
Toxoplasma gondii, Toxoplasmosis, Middle East

Poster

Environmental Heavy Metal exposure and gestational diabetes Diabetes Milluts: A comprehensive Literature Review

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INTRODUCTION: Gestational diabetes mellitus (GDM) is a metabolic disorder characterized by high blood sugar levels during pregnancy, exposing risks for both mothers and neonates. While heavy metals such as Lead, Arsenic, and Cadmium are known to have endocrine-related adverse health effects, their association with GDM development is not yet adequately described. This review aimed to explore the association between maternal early-stage exposure to heavy metals and the development of GDM.
MAIN BODY: Relevant databases were searched for original research reports, and a total of 12 articles were retained for study. Studies were included when they met the following criteria: Association between heavy metal exposure and gestational diabetes and gestation. The mothers who had no history of diabetes or GDM. Mothers who were and only were diagnosed with GDM during the study. The diagnosis of GDM was determined by the guidelines of The American Diabetes Association and the World Health Organization. Studies were excluded if they did not have a definitive conclusion, or their association was between heavy metals and the pregnancy complications. The required data was extracted from these studies, and their methodology was assessed. The research indicates a consistent association between exposure to certain metals, such as Nickel, Antimony, Tin, mercury, Cadmium, Arsenic, and possibly lead and chromium, and the risk of GDM, with some metals playing a more significant role than others. Moreover, the unsaturated phospholipid fatty acids (PLFAs) could be potential biological pathways that mediate metal-GDM association, which could be explored in the future.
CONCLUSION: Gaining knowledge about the effects of heavy metal exposure in the early stages of pregnancy can help in developing strategies to prevent and reduce the risk of GDM.

KEYWORDS:
Gestational Diabetes Mellitus, Heavy Metals, Maternal exposure

Poster

Plasma epidermal growth factor is reduced in obesity and associated with a protective lipid profile

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Background: Obesity is a chronic medical condition characterized by an unhealthy excessive accumulation of white adipose tissue. Growth factors play an important role in the healthy expansion of adipocytes and in obesity, growth factor signaling is dysregulated. Epidermal growth factor is synthesized in adipocytes and is known to be involved in the maintenance and development of adipose tissue. Furthermore, it has been reported that EGF levels are reduced in diabetes, a condition in which obesity is a major risk factor.
Aim: To investigate the levels of EGF in the plasma of obese individuals and to explore correlations between EGF and biochemical parameters.
Methodology: This retrospective study included 141 participants aged ≥21. Clinical, and laboratory data were obtained from medical records. Based on body mass index (BMI), participants were stratified into three groups; non-obese, overweight and obese. Plasma EGF levels were compared between stratified groups and correlated with obesity markers. Additionally, EGF was correlated with biochemical parameters including Fasting Blood Glucose (FBG), glycated hemoglobin (HbA1C) and insulin as well as lipid profile parameters including total cholesterol (TC), triglycerides (TG), low-density lipoproteins (LDL) and high-density lipoproteins (HDL). The study was approved by the HSC ethics committee for student research at Kuwait university (FAHS project no. 28).
Results: EGF was significantly reduced in obese individuals compared with non-obese individuals ($p<0.0001$). furthermore, EGF was negatively correlated with BMI in entire study population. Specifically in obese individuals, EGF was was negatively correlated with TG and positively correlated with HDL. No correlations were observed between EGF and FBG, HbA1C or insulin levels in obese individuals.
Conclusion: Data suggest that reduced EGF is a pathogenic consequence of obesity and that enhancing EGF levels might protect against dyslipidaemia. Understanding the molecular mechanisms that lead to reduced EGF in obesity could aid in the development of novel therapeutics, which could possibly lower the risk of developing cardiovascular complications and diabetes.

KEYWORDS:
Epidermal Growth Factor, obesity, lipid profile

Poster

White Garlic, Black Garlic or Garlic Powder: Which One Eliminated Colistin-Resistant E.coli?

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INTRODUCTION

Nowadays, antibiotic resistance is a global threat. Antibiotic resistance is increasing the prevalence of bacterial infection-related fatalities among patients yearly. The term "ESKAPE pathogens "refers to six main microorganisms that frequently cause death by evading the effects of antibiotics. These bacteria include *Escherichia coli, Streptococcus pneumonia, Klebsiella pneumonia, Acinetobacteria baumanii, Pseudomonous aeruginosa, and Enterobacter sp I*nfections caused by antibiotic-resistant bacteria are on the rise, and treatment options remain limited. Some bacteria such as *Escherichia coli* are resistant to most available antibiotics, including colistin. As a result, new treatment options are desperately needed. This study aims to eliminate colistin-resistant *E. coli C91* using garlic as a natural remedy. In this study we evaluate the efficacy of white, black, and garlic powder as an antibacterial against *E. coli C91* using aqueous garlic.

METHODS

The aqueous garlic extracts were prepared by mixing 0.4 grams of each type of garlic into a 10 ml capacity tube together with 3 ml of distilled water. This results in an effective garlic concentration of 0.13 g/ml. The garlic extracts were then examined using agar well diffusion assays against a variety of Gram positive and Gram-negative bacteria. The extracts were tested for heat stability by heating them at 80C. These tests were run in triplicate. Statistical analysis was performed to demonstrate the whether the inhibition was statistically significant.

RESULTS

The suspension and aqueous layer of the white garlic was able to inhibit *E. coli* C91. However, as demonstrated by the large zone of inhibition, it was more effective in suppressing the growth of *S. aureus* (Table 1). Neither the suspension nor the aqueous layer of black garlic had any antimicrobial effect on *E. coli* C91 and *S. aureus* (Figure 1). The suspension and aqueous layer of garlic powder demonstrated strongest antibacterial compared to other forms of garlic, inhibiting both *E. coli* C91 and *S. aureus,* forming the largest zones of inhibition (Table 1 and Figure 1). After heating the garlic extract suspension, it was still able to inhibit *E. coli* C91 (Figure 2). Antibacterial compounds in the garlic extract were shown to be heat resistant since there was no significant change in the zone of inhibition before and after heating at 80°C (*P* value= 0.1).

CONCLUSION

Garlic powder was shown to have the strongest effect in this study when compared to other types of garlic and was proven to be beneficial in destroying harmful bacteria such as *S. aureus* and colistin-resistant *E. coli* C91.

KEYWORDS:
E. coli C91, antibiotic resistance, garlic

Poster

MLS-15

Comparing bacterial contamination in female and male gyms

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Background: An important part of encouraging physical fitness and general health is the use of gyms and gym equipment. Fitness center equipment and machines have the potential to facilitate the spread of bacterial infections among several users. Also, gyms provide an optimal environment for the spread of germs.
Aim: This study focuses on comparing female and male fitness centers for the presence of bacteria and fungi, especially bacteria. To my knowledge, this was the first study to investigate bacterial infection comparing male and female fitness centers.
Methodology: The total of 10 samples conducted in five different places in female and male fitness centers were swabbed from the bathroom, lockers, treadmill, dumbbells, and stationary bike. The gyms were randomly selected based on their popularity and availability.
Result: Female gyms are cleaner than male gyms; this is possibly because the cleaning process is more intense in female gyms than male gyms. Also, the predominant bacteria in female and male gyms were Staphylococcaceae species, which are considered normal flora in the skin. Most Staphylococcus species isolated was *Staph. epidirmidis*. The abundant bacteria mainly isolated in male gyms were gram-positive streptococci. The most common streptococci bacteria that the result showed in order are *Lactococcus lactis* and *Listeria grayi*. Gram-negative bacteria are less likely to be found, according to this study. *Photobacterium damselae* and *Enterobacter cloacae* are the only gram-negative bacteria that were isolated in both gyms.
Conclusion: Based on the results that we obtained from this study, the gyms have pathogenic and normal flora bacteria. The presence of fungi is also isolated in both gyms. Most of the bacteria that have been isolated are antibiotic-sensitive; however, it was concerning to see that *Listeria grayi* was resistant to vancomycin and tobramycin based on antibiotic susceptibility testing results. The reduction of bacterial illnesses and the avoidance of cross-contamination can be achieved by the creation of efficient preventative measures, such as routine cleaning of gym equipment and machines and good hand hygiene.

KEYWORDS:
Fitness centers, normal flora, female gyms, male gyms

Poster

MLS-16

Microorganisms Contamination in Domestic Refrigerators

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INTRODUCTION:

Microorganisms, such as bacteria and fungi, are living organisms that can be incredibly resilient and able to survive in extreme environments, including low temperatures. These microorganisms can grow and thrive in refrigerators if the conditions are suitable. Unwashed fruits and vegetables can spread harmful bacteria and fungi, which can lead to foodborne illness if consumed. They also contribute to cross-contamination between stored and fresh food. The purpose of this study was to investigate and identify the presence of microorganisms in household refrigerators.

METHODS:

The study was conducted using various methods. A sterile swab was used to sample the surface of the fruits and vegetables basket of ten refrigerators. The samples were subcultured in enrichment broth, followed by culturing the collected samples on two types of culture media to investigate the presence of bacteria and fungi. The media used for bacterial culture were incubated at 37^{o}C for 24 hours, while the media used for fungal culture were incubated at 30^{o}C for up to 5 days. Bacterial identification was conducted using microscopy and biochemical tests, and fungi were identified morphologically using a microscope.

RESULTS:

The study revealed the presence of bacterial and fungal microorganisms in the sampled refrigerators. The bacteria isolated from the samples were *Micrococcus* spp., Gram-positive bacilli, and Gram-positive cocci in clusters, which were found in several samples, while *Serratia Odorifera* was isolated from one sample. The isolated fungi were *Penicillium* spp., *Rhizopus* spp., and *Candida* spp.

CONCLUSION:

These findings suggest that consumers did not adhere to proper food-handling practices, resulting in contamination within refrigerators' baskets. The findings of this study provide valuable insights into the potential health risks associated with microorganisms in household refrigerators. Furthermore, it is a crucial to improve knowledge and awareness regarding preventive measures against the growth of harmtul pathogens to prevent foodborne diseases.

KEYWORDS:

Refrigerators; Fungi; Microorganisms

Poster

MLS-17

Assessment of granulocytes in MDS

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INTRODUCTION

MDS, is a group of clonal bone marrow disorders that originate from myeloid progenitor cells, and it's characterized by insufficient haematopoiesis and peripheral blood cytopenia that include granulocytes, and lymphocytes. As the level of functionality of granulocytes vary due to each disease's unique pathophysiology. In which the granulocytes level does decrease in several haematological malignancies. Studying the expression of granulocytes may impact the future treatment development. The purpose of this research is to examine the granulocytes level in different haematological malignancies.

METHODS

The data was retrieved from the flow cytometry lab at Badriya Al-Ahmad Chemo Center in Kuwait Cancer Control Center (KCCC) as FCS file. In a cohort of 73 patients, the diagnosis was identified for each as; [26.02% were AML, 20.54% were CLL, 5.47% were MDS, 9.59% were Others]. Granulocytes were identified by gating the Side Scattered Cell Area (SSC-A) and CD45 then Side Scattered Cell Area (SSC-A) with the Forward Scattered Cell Area (FSC-A) in order to quantify the granulocyte percentages. Lymphocytes were identified by gating the Side Scattered Cell Area (SSC-A) and CD45 then Side Scattered Cell Area (SSC-A) with the Forward Scattered Cell Area (FSC-A) to quantify the lymphocytes percentages. Both data were normalized to CD45.

RESULTS

In our study there was a statistically significant difference between MDS with age (p-value=0.0458). Granulocytes were statistically significant with CLL when compared with the control (p-value=0.0009). Lymphocytes were statistically significant with CLL when compared with the control (p-value=0.0002).

CONCLUSION

From the results obtained we can conclude that the level of Granulocytes has a relation with age, as older people have a higher risk of developing different haematological malignancies. The rest of my hypothesis couldn't be supported with previous literature due to the lack of research upon my study. Further tests are required to complete this research as we need to explore for future development of therapeutic target.

KEYWORDS:
MDS, Granulocytes, Lymphocytes, Flow Cytometry.

Poster

MLS-18

Sbi induces extracellular release of IL-33 from normal human epidermal keratinocytes possibly via PTRF/Cavin-1 translocation to the nucleus

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INTRODUCTION

Atopic Dermatitis (AD) is a chronic condition in which an inflammatory response of keratinocytes is the most common symptom. *Staphylococcus aureus* (*S. aureus*) colonizes the skin of AD patients, where it has shown to induce inflammation via an array of virulence factors. *S. aureus*-derived second binding immunoglobulin protein (Sbi) has been shown to stimulate the release of IL-33 from normal human epidermal keratinocytes (NHEKs). A study on human bronchial epithelial cells revealed a mechanistic link between IL-33 and Polymerase-1 and transcript release factor (PTRF, also known as Cavin-1). The aim of the study was to investigate the effect of *S. aureus*-derived Sbi on the cellular location of Cavin-1 in NHEKs and whether cellular location of Cavin-1 correlated with IL-33 extracellular release.

METHODS

Filtered *S. aureus* supernatants (FSA) were prepared from *S. aureus* Newman strain, which contained Sbi and Sbi mutant strain (ΔSbi) and co-cultured with NHEKs. NHEKs were then subjected to immunofluorescence detection of Cavin-1. Cavin-1 expression was analysed by densitometry and nuclear translocation was assessed by colocalization analysis.

RESULTS

Cavin-1 was constitutively expressed in NHEKs, particularly in cytoplasmic vesicles and in the plasma membrane. Colocalization analysis revealed Cavin-1 translocation to the nucleus in the presence and absence of Sbi. *S. aureus*-derived Sbi induced significant release of IL-33 from NHEKs ($p<0.0001$) while ΔSbi did not.

CONCLUSION

Cavin-1 may be involved in the Sbi/IL-33 release pathway given that Sbi induced-IL-33 release coincided with Cavin-1 translocation to the nucleus. Phosphorylation of Cavin-1 in the nucleus dictates its function in the cell. Therefore, phosphorylation status of Cavin-1 in response to Sbi must be determined in order to understand the mechanisms of IL-33 release. Elucidating this pathway may help in developing novel therapeutic aimed at reducing inflammation in AD patients by limiting IL-33 release.

KEYWORDS:
Atopic dermatitis, *Staphylococcus aureus*, Second binding immunoglobulin, IL-33, Cavin-1

Poster

MLS-19

Water-borne bacterial infections in tap water sources in community

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Background: Infections related to the presence of microorganisms in water are known as water-related infections spreading by means of drinking water or using water as source of many tasks such as, shower, washing clothes or even cooking. Several factors can play a role in facilitating the growth of different microorganisms in pipeline system, leading to serious infections. **Objective**: To investigate bacterial prevalence in different water sources, tap water used for drinking and tap water used for use.
Methods: Ten tap water samples were collected from different areas used for drinking. The water samples were investigated for presence of bacteria by routine identification methods, Gram stain and Api identification system.
Results: Non-fermenter spp were found in 4 samples (40%), *Ochrobactrum anthropi* (*Ochrobac.anthropi*) were found in 3 samples (30%). While *Flavimonas oryzihabitans* (*Falvi.oryzihabitans*) and *Falvi.oryzihabitans* was found in two collected water sample (20%). Last, *Pseudomonas.fluoroscent/putida* (*Ps.fluo/putida*), *Gemella haemolysans* (*Gem. Haemolysans*) and *Micrococcus* spp. were found in one sample 1 (10%). all bacteria showed growth of >200 CFU/mL exceeding normal levels and indicating contamination. No antimicrobial testing was performed as all the of the detected bacteria were environmental and no available breakpoints were previously published for such bacteria.
Discussion: Interestingly, all bacterial strains found in this study were environmental bacteria of no clinical significance. Only few of which are rarely reported to cause infections only to immunocompromised hosts, antimicrobial susceptibility testing was not performed, due to the nature of the reported bacterial strains with no published breakpoints of resistance from laboratory standards.
Conclusion: These findings are of great impact to scientific field, as they can serve the beginning of an era of surveillance of water sources used in community with comparison to other water sources used in hospital or even research settings. Further molecular detection of bacterial strains from water lines is advised.

Keywords:
Water-related infections / Microbiological investigation / Non-fermenter spp.

Poster

Epidemiology of infections linked to dermatophytes in Kuwait: a retrospective study

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Dermatophytosis is a widespread fungal infection that affects individuals from all over the globe. It is brought on by keratinophilic fungi known as dermatophytes, which can impact body parts, namely the skin, hair, and nails. The prevalence of dermatophytosis, along with its causative agents, varies globally and is susceptible to change over time. The objective of this study is to provide an epidemiological assessment of dermatophytosis in Kuwait throughout the course of three years (2021-2023) with a focus on the differences in the disease distribution per year, gender, age groups, most common isolate, and seasonality. The data from the Reference Mycology Laboratory in Kuwait was obtained. Microsoft Excel (Version 16.57, 2021) was used to numerically code and label all of the data. Then seasonality of the dermatophyte infections was analyzed by GraphPad Prism 7 (GraphPad Software Inc., USA) using the Pearson chi-square test where statistics will be deemed significant if the P-value < 0.05. A total of 134 specimens from 130 patients were collected between 2021 and 2023. The most frequently isolated dermatophyte was Microsporum canis (28%), which was followed by Trichophyton mentagrophytes (19%). Tinea corporis (42%) was the main prevalent form of dermatophytosis, followed by tinea capitis (38%). The most frequently affected age was between 0 to 18 years with tinea capitis affecting most of them. Males (52%) had a somewhat higher occurrence of dermatophytosis compared to females (48%). A statistical analysis revealed that the frequency of dermatophytosis cases did not significantly change across seasons (P-value = 0.0839). This study evaluated the epidemiological pattern of dermatophytosis in Kuwait, revealing variation in infection occurrence influenced by multiple factors. Additionally, the incidence of zoophilic dermatophytes was found to be higher than anthropophilic dermatophytes. Therefore, it is imperative to consider preventive measures to limit dermatophytosis transmission.

KEYWORDS:

Epidemiology, dermatophytosis, Kuwait

Poster

MLS-21

Epidemiology and The Global Burden of Toxocariasis

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INTRODUCTION: Toxocariasis is neglected zoonotic disease caused by nematodes of *Toxocara* species that are commonly transmitted to human via zoonosis mainly from dogs and cats. The parasite can be transmitted by ingestion of embryonated eggs directly from contaminated soil, or indirectly through faecal contaminated food, water, hands, or surfaces. Eating raw or undercooked meat of various paratenic hosts can also transmit the disease to humans. It has a worldwide distribution with different prevalence rates and can be presented clinically in humans as four different forms of toxocariasis: ocular, convert, neurotoxocariasis, and visceral larva migrans. The disease can range from being asymptomatic infection, to severe organ damage. In this study, we aim to determine the epidemiology and prevalence rates of toxocariasis globally and to investigate the health burden of *Toxocara* infections in humans. **MAIN BODY:** In this literature review, we have presented recent epidemiological data from meta-analyses and systemic reviews from various regions, which gave complete coverage and worldwide perspective to evaluate the global spread of toxocariasis. Approximately 1.4 billion people infected or previously infected with *Toxocara* spp. worldwide, with an estimated range between 19-44%. The average of global prevalence of *Toxocara* infection in stray dogs (11%), cats (17%), as well as in soil (21%) were also estimated. *Toxocara*'s spread was not limited to tropical or subtropical countries only, it was also seen in developed countries with a high prevalence. Several factors influence these differences including, socioeconomical, climate, and geographic factors. **CONCLUSION:** Toxocariasis is considered one of the most prevalent zoonotic parasitic diseases in both developed and developing countries, with different variant rates depending on associated transmission risk factors. However, the size of the problem is still unknown due to the lack of studies, especially within the Middle East region. There is a need for future research in Kuwait and other countries with similar demographic population to determine the impact of the disease on the general population and those at risk. This study will help to implement the findings in future public health awareness programs within a One Health approach to prevent community transmission in Kuwait and other countries.

KEYWORDS:
Toxocariasis, Toxocara, Toxocara canis, Toxocara cati, One Health

Poster

MLS-22

Can Liver Enzymes Predict the Development of Gestational Diabetes? A Retrospective Study

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INTRODUCTION
Gestational diabetes mellitus (GDM) poses significant risks for maternal and fetal health. Up to 50% of women with GDM progress to type 2 diabetes (T2DM) within 5-10 years, and offspring face increased risks of T2DM. In Kuwait, about 12.6% of pregnant women have GDM, exceeding rates in other countries by 4-6%. The association between liver enzymes, particularly the AST/ALT ratio, and GDM remains uncertain. Early GDM identification improves outcomes for both mother and child, highlighting the importance of effective prediction and treatment.

METHODS
Data was sourced from historical records at Al Sabah Maternity and Al Farwaniya Hospitals in Kuwait. It involved 83 women aged 26-37 years, including 49 diagnosed with GMD. Pregnant women without prior GDM history, who had the HbA1c test at 24–28 weeks, were included. Exclusions were made for patients with pre-existing diabetes or chronic illness. The normality of continuous variables was assessed using the Shapiro–Wilk and Kolmogorov–Smirnov tests. Additionally, multivariate logistic regression analysis was conducted to evaluate the association between AST/ALT levels and the subsequent risk of GDM. Statistical significance was determined at $p < 0.05$.

RESULTS
The study's overall findings did not uncover a statistically significant correlation between GDM risk and the AST/ALT ratio in the first or third trimester of pregnancy. However, there appears to be a potential association between AST/ALT levels and GDM development, particularly notable during the first trimester. Additionally, pregnant women diagnosed with GDM in Kuwait exhibit distinct characteristics, including younger age, shorter gestation, lower birth weights, and a higher likelihood of cesarean delivery.

CONCLUSION
Our study did not identify a significant association between the AST/ALT ratio or liver enzymes and the incidence of GDM. While a difference in the AST/ALT ratio was observed during the first trimester between GDM and non-GDM groups, it did not achieve statistical significance. More investigation is warranted to elucidate the connections between liver enzymes and GDM risk, as our findings were inconclusive due to limitations such as small population size, restricted time frame, and inadequate record system affecting data quality and completeness.

KEYWORDS:
GDM, AST/ALT Ratio, Biomarkers

Poster

MLS-23

Renal Changes in Diabetic Mouse Pups whose mothers were Supplemented with carnitine.

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INTRODUCTION

Diabetes mellitus imposes significant health risks that demand careful management and awareness. It can lead to major renal, hepatic and cardiovascular disorders. Carnitine, which is a water-soluble amino acid promotes glucose absorption, storage, and oxidation in diabetics. It plays an essential role in energy metabolism and glucose metabolism. This study was focused on the effects of L-carnitine supplementation in the kidneys of non-obese diabetes (NOD) mouse pups whose mothers were fed with carnitine supplements in their diet during pregnancy.

METHODS

In this study normal non-diabetic and NOD mice were used. The NOD mice were further divided into three groups. Group one, whose mothers were fed a low carnitine diet without carnitine supplement during pregnancy, group two, whose mothers were fed the low- carnitine diet with a supplement of 0.15 mg/gm L-carnitine, and group three, whose mothers were fed the low-carnitine diet with a supplement of 0.3 mg/gm L-carnitine. After the development of diabetes as determined by blood glucose analysis, the mouse pups were sacrificed, the kidneys were removed, and the renal changes were studied using Mayer's hematoxylin and eosin, Periodic Acid Schiff's, Masson's trichrome, and Gomori's Methenamine Sliver staining methods.

RESULTS

NOD mouse pups whose mothers were fed a low- carnitine diet without any L-carnitine supplementation during pregnancy showed severe diabetic changes such as increased in collegen levels, increased thickness of basement membranes, and hypertrophy of the glomerulus. The histopathological data presented in this study shows that carnitine supplementation has reduced the effects of diabetes and enhanced the architecture of the kidneys as compared to the mouse pups whose mothers were not supplemented with carnitine in the low-carnitine diet.

CONCLUSION

Our study indicated that carnitine has beneficial effects on the diabetic kidneys of mice. However, further studies are required to understand the optimum dose, duration, and type of administration.

KEYWORDS:
Kidney, Diabetes Mellitus, Carnitine, NOD mice.

Poster

MLS-24

Examining the Relationship between SARS-Cov-2 and HLA type

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INTRODUCTION

The novel SARS-CoV-2 reached Kuwait in February 2020. There were many efforts to study factors that could play a role in disease spectrum severity; to investigate how some patients could be asymptomatic and others may enter the ICU.

HLA molecules are considered as the greatest polymorphic region in the human genome. This variation affects the strength of peptide binding and the resultant immune response. HLA frequencies differ between individuals and populations. Many studies show that there is a relationship between HLA type and severity or occurrence of a certain diseases or infections. Associations between COVID-19 and HLA have also been made.

METHODS

In this study we aimed to look at HLA loci in a cohort of healthy individuals as well as another cohort who were admitted to the ICU due to severe COVID-19. Of note is the single Kuwaiti ethnicity of the cohort. We set out to observe certain patterns in HLA that may be influential in outcome that were correlated in a large body of published studies.

RESULTS:

•HLA-C*04:01:01 is correlated with sever COVID-19.
•Both HLA-C*12:03:01 and HLA-A*02:05:01 are considered as protective HLA types.

Discussion:

Many studies showed that there were associations between HLA type and severity or occurrence of a certain disease or infection. The HLA molecules that were present in these cohorts were compared to studies that implicated certain HLA molecules. Three different studies reported a correlation between HLA-C*04:01:01 and severity indicating its strong association with severity in a myriad of ethnicities which is what we also saw in our ICU cohort.

HLA types and their association was an interest because of their major role in immune regulation. Moreover, we compared our data with previous studies that found a link between HLA-C*04:01:01 associated with severe form of COVID-19 and both HLA-C*12:03:01 and HLA-A*02:05:01 are considered as protective HLA types.

CONCLUSION

Further studies with larger patient numbers are needed to make HLA associations of significant value especially in the Kuwaiti population.

KEYWORDS:
COVID-19, SARS-CoV-2, HLA type and Kuwait

Poster

MLS-25

Fungal and Bacterial communities in Household washing Machines

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INTRODUCTION

Washing machines are essential tools in modern life for maintaining personal hygiene and cleanliness. However, microorganisms, including bacteria and fungus, can settle and grow in the machine's warm, humid, and nutrient-rich atmosphere and reside in clothes washers. Therefore, this study aimed to investigate and identify the microorganisms mainly bacteria and fungi, present in the washing machines.

METHODS

The study was carried out by taking samples from the rubber seals of ten washing machines using a sterile swab and then subculturing them in enrichment broth. The samples were then cultivated on two different types of culture media to enhance the growth of bacteria and fungi. In contrast to the fungal culture medium, which was incubated at 30°C for up to five days, the bacterial culture medium was incubated at 37°C for 24 hours. Fungal identification was accomplished morphologically under a microscope, while bacterial identification was accomplished by means of biochemical testing and microscopy.

RESULTS

According to the study's findings, the sampled washing machine contained bacterial and fungal germs. Staphylococcus haemolyticus was discovered in many samples, along with Micrococcus spp., Gram-positive bacilli, and Gram-positive cocci in clusters. The isolated fungi were Aspergillus niger, Candida spp., and Fusarium spp.

CONCLUSION

The study shows how washing machines are frequently contaminated by fungi and bacteria, with the inner rubber door seal being the most usually impacted area. Potential health hazards may arise from the transfer of fungal agents from polluted waste materials to laundered fabrics. It is imperative to clean and disinfect washing machines regularly to lessen this problem. Aspergillus niger and Fusarium were the most commonly found fungus genera. These species are known to cause health issues, particularly in those with impaired immune systems.

KEYWORDS:
Washing machine, bacteria, fungi

Poster

MLS-26

Relationship between Blood Groups and SARS-CoV-2 Infection Severity in the Kuwaiti Population

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INTRODUCTION

SARS-CoV-2 is still a health concern, improving our knowledge of the factors that affect disease severity is therefore pertinent. In numerous other demographics the ABO blood group has been hypothesized as a probable predictor of infection severity. In this we study aimed to look for a correlation between blood group and SARS-CoV-2 infection severity in a Kuwaiti population.

METHODS

The study received ethical approval from the Kuwait Ministry of Health's ethics committee for the protection of human subjects (1525 / 2020). Written informed consent was obtained from all participants in this study.
A cross-sectional analysis was performed on 468 confirmed cases. Clinicalseverity stratification was based on the World Health Organization of COVID 19.

RESULTS

The blood groups of all cohort participants were recorded (A+, A-, AB+, AB-, B+, B-, O+, and O-). The most common blood type for all severities of the infection was O+. A chi-square test of independence was performed it showed no statistical association between the blood group and infection severity outcome. ($\chi^2(14) = 10.29$, $p = .173$). A chi-square test of independence was performed it showed No statistical association between the blood group and infection severity outcomes.

CONCLUSION

A study in Kuwait found no significant link between blood type and COVID-19 severity, aligning with mixed research outcomes on this topic. While some studies indicate blood type O might offer protection, this wasn't evident in our findings. This highlights the intricate nature of the disease and suggests that genetic and immune factors may play a more prominent role. Further research is crucial for a comprehensive understanding of host susceptibility and virus virulence, emphasizing the importance of an inclusive epidemiological approach to unravel the complexities of COVID-19.

KEYWORDS:
SARS-CoV-2, COVID-19, blood group

Poster

A Preliminary Study Exploring New Therapeutic and Prognostic Biomarkers in AML

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Background: Acute myeloid leukemia (AML) is one of the most common types of blood malignancies among adults and its characterized by cases of relapse, treatment unresponsiveness and poor disease prognosis. One of the most common techniques used to diagnose AML is flow cytometry as it made it easier to analyze clusters of differentiation (CD markers) and correlate them with the disease. It has been found that some CD markers are useful for diagnosis while others for disease prognosis.
Aim: The aim of this retrospective analysis is to explore the pattern of some CD markers in AML patients with a focus on the immune microenvironment, and compare them to the control; CD7, a marker expressed on the surface of cytotoxic T cell subsets and natural killer cells, and CD45 which is expressed on the surface of all immune cells especially lymphocytes.
Materials and methods: Data for analysis were retrieved from Kuwait Cancer Control Centre Flow Laboratory and studied using FlowJo (v10.10.0_CL) [FlowJo™ Software] and GraphPad Prism (10.2.2) [Statistical analysis software]
Results: AML patients were found to have significantly increased percentage of CD45+ lymphocytes (mean = 83.24±13.31 (AML) vs 63.33±16.53 (control), p value = 0.0014). AML patients also showed a significant decrease in the percentage of CD7+ cells (mean = 48.32±25.31 (AML) vs 76.99±8.141, p value <0.0001). Neither age nor sex had any influence on the statistically significant results (mean = 51.65±17.7 (AML) vs 50.94±18.69 (control), p value = 0.8885). 41.2% of control were females, 47% AML patients were females (p value = 0.7393).
Discussion and Conclusion: The significant difference in CD45+ lymphocytes and CD7+ lymphocytes highlight a dysregulation in the immune microenvironment of AML patients. Taking these observations a step further and exploring whether they correlate to response to therapy could help tailor patient management and might contribute towards finding better classifications, prognosis, and new cures.

Key words:
Acute myeloid leukemia, CD7, Cytotoxic T cells, NK cells, CD45, lymphocytes

Poster

MLS-28

Ki-67 in invasive ductal carcinoma

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Background: Mortality unfortunately is the most likely outcome of breast cancer if it wasn't detected and treated at an early stage. Breast cancer is the most frequently encountered cancer in Kuwait, and it is the main cause of death due to cancer in the female population. Breast cancer is categorised into two types according to the affected part of the breast the first type being invasive ductal carcinoma (IDC) which is the predominant type, the other one being invasive lobular carcinoma (ILC). Ki-67 is a protein that is considered as a proliferation index, and it is measured in breast cancer cells using immunohistochemistry to estimate the prognosis of the cancer and to make a plan for the treatment.
Aim: Here, we studied the relationship between Ki-67 index in each stage of invasive ducal carcinoma.
Methodology: A data from Kuwait Cancer Control Center (KCCC) was provided to us with 22 cancer patients results that we used to conclude our aim.
Results: In invasive ductal carcinoma grade one we had 4 patient results and the average Ki-67 index was 11.24%. In grade two invasive ductal carcinoma we had 12 patient results, and the average was 22.75% and in grade three invasive ductal carcinoma we had 6 patient results, and the average was 28.33%.
Conclusion: In conclusion we found out that Ki-67 proliferation index level was low in grade one, intermediate in grade two and high in grade three. The more advanced the breast cancer was and the more aggressive it was the higher the level of the Ki-67 proliferation index.

Key words:
Breast cancer, invasive ductal carcinoma, Ki-67 proliferation index, biomarker

Poster

MLS-29

Respiratory Syncytial Virus Prevalence in Kuwait among Different categories of Patients

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INTRODUCTION

Respiratory syncytial virus (RSV) commonly causes severe infections for the respiratory tract that may lead to high mortality and morbidity. It is the main cause of lower respiratory tract infections particularly in infants and young children, but it can also affect adults over 65 years old. It has been considered a seasonal virus; this allows it to spread in waves throughout the year.

METHODS

Date received from samples, which were collected from patients with respiratory symptoms processed and analyzed in the Virology lab at Mubarak Al Kabeer Hospital. Samples were first analyzed using the special techniques to detect RSV virus and other respiratory viruses. Results were further analyzed using Microsoft Exel (V16.83).

RESULTS

It was determined that for three years from 2017 to 2019, 2017 was the highest year with RSV infection among patients, Pediatrics and males were the major groups affected with RSV infection. Adults group were affected.However, they are less than pediatrics with the same steady rate for three years in a row.

CONCLUSION

The prevalence of RSV in Kuwait among patients with different age, gender, and nationality was significantly increased in 2017 than other year. RSV was found more predominant among pediatrics than adults. Males are at higher risk than females to have RSV infection. The distribution of RSV among non-Kuwaiti patients in two years in a row is more than Kuwaiti patients which is higher in 2017.

KEYWORDS:
RSV, Pediatrics, Lower respiratory tract infection, hospitalisation

Poster

The possible involvement of JAK2/STAT3 pathway in doxorubicin-induced chemoresistance on MDA-MB-231 breast cancer cell line

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Introduction: Triple negative breast cancer (TNBC) is an aggressive type of breast cancer, which have been associated with poor prognostic outcomes and the lack of defined druggable molecular targets. Being a worldwide concern, various methods have been implicated to treat breast cancer, especially TNBC. Doxorubicin (DOX), an antitumor antibiotic and member of the Anthracyclines family, is a commonly used chemotherapeutic agent for treating breast cancer. Unfortunately, breast cancer recurrence and progression as well as chemoresistance has been recorded after the completion or even after multiple cycles of DOX treatment. The exact mechanism of DOX-induced chemoresistance observed in breast cancer is not yet clearly understood. Several studies have shown that overly activated IL-6/JAK2/STAT3 signaling pathway may be involved in the chemoresistance associated with DOX treatment.
Aim: The study aims in investigating the involvement of the IL-6/JAK2/STAT3 pathway in DOX-induced chemoresistance, cancer progression, and metastasis in MDA-MB-231 cell line.
Methods: MDA-MB-231 cells were treated with different concentrations of DOX for 24 hours, and then tested via different methods. The trypan blue exclusion method and MTT assay were used to evaluate the cytotoxic effect of DOX on cancer cells through cell viability and proliferation assessments. Western blotting was used to detect the expression of IL-6, p-STAT3, SNAIL, and MMP9 proteins along with various apoptotic proteins. Immunofluorescent staining was utilized to detect the expression and the localization of p-JAK2 and p-STAT3 proteins. Cell migration was observed using scratch assay.
Results: In the presented study, MDA-MB-231 cell viability and survival were reduced with increased DOX concentration, which were mediated by activated apoptotic pathway characterized by downregulated Bcl-xl, Bax and Caspase 3 proteins, along with cleaved PARP protein were recorded. IL-6/JAK2/STAT3 pathway proteins were seen to have increased expressions in a dose-dependent manner. The upregulated SNAIL protein expression seen further supported the suggestion of this pathway's involvement in DOX-induced chemoresistance. Cell migration was enhanced, along with upregulated MMP9 protein expression.
Conclusion: To conclude, we highlighted the importance of thoroughly studying JAK2/STAT3 pathway in the context of DOX-induced chemoresistance, which might act as a promising therapeutic target.

Keywords: Breast Cancer, Doxorubicin, Chemoresistance, Cytotoxicity, JAK2/STAT3 pathway.

Poster

MLS-31

Effects Of Different Soaps And Antiseptics On Skin Flora Bacteria

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INTRODUCTION

Hands that have been contaminated with various potentially pathogenic bacteria can increase the risk of spreading disease among patients, which increases the rate of infection spread. Therefore, washing hands is especially important before and after working in the laboratory, especially for workers in the health sector. The aim of this study is to determine the effectiveness of some types of antibacterial soaps and antiseptics on killing bacteria.

METHODS

Four diverse types of antibacterial soaps and antiseptics are collected from different companies. They are antiseptic gel, ethanol, soap, and antiseptic liquid. Two types of bacteria were used they are Escherichia coli, which was cultured on MacConkey agar(MAC) , staphylococcus aureus which was cultured on Mannitol Salt Agar (MSA) and Nutrients Agar (NA) for both Escherichia coli and Staphylococcus aureus bacteria after that the different soaps and antiseptics were added then incubated at 37°C for 24 hours. Serial dilution process has also been worked on , by using two types of bacteria were diluted in 4 mL of nutrient broth (NB) and incubated at 37°C for 24 hours in the next day 1 mL of different soaps and antiseptics were added to it and 1mL of it was add to new tube which also has 4mL of nutrient broth(NA) this step was repeated two times then incubated at 37°C for 24 hours then check the reaction in the next day

RESULTS

After the experiment we notice that the liquid antiseptic was Mose effective type in killing bacteria more than soaps, ethanol, and gel antiseptic, the least effective type in killing bacteria was gel antiseptic.

CONCLUSION

Through this study, we learned about the importance of washing hands regularly and its efficiency in reducing the spread of infection and bacteria, and that not all types of soaps and antibiotics that are antibacterial are able to kill bacteria in the same way.

KEYWORDS:
MacConkey agar(MAC) , Mannitol Salt Agar (MSA) , Nutrients Agar (NA) , Nutrients broth (NB)

Poster

MLS-32

An Exploration of Bacterial Life Inside Air Conditioning Systems

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Background: Air conditioning is a vital part of modern life, especially when the temperature begins to rise, which helping us to maintain a comfortable and cool environment, but have you ever wondered about the hidden world of air conditioning, and what can build up inside A.C system? A.C system can cause a range of health issues and problems if not properly maintained. In this study, we will take a closer look at the potential hidden world of microbial life that exists in our A.C system, and what kind of microbial growth and other microorganisms that will be found!
Aim: to identify the different types of microorganisms that present in the air-conditioning system such as fungi, molds or bacteria, especially the bacteria.
Methodology: the study was conducted randomly by taking twenty-five swabs' samples from different departments and from four different level of building. The sample collected by taking swab from the third floor then going down to second floor, after that from the first floor, and finally from the basement.
Results: the bacteria isolated are classified as opportunistic bacteria and identified to two subcategories. The first is a gram-positive bacterium *Aeroccus viridans*, gram positive coagulase negative *Staphylococcus hominis, Staph. xylosus, Micrococcus Spp.* The second is gram negative bacteria for the rest of samples such as *Chryseomonas luteola, yersinia pseudotuberculosis, stenotrophomonas maltophilia, Aeromonas salmonicida, Burkholderia Cepacia, Flavimonas oryzihabitans, Pseudomonas aeruginosa,* and *Past.pneumo. /haemol*.
Conclusion: based on this study, the hidden bacteria we found inside the A.C. system may cause a harmful effect on the individuals health and can causes an allergic response over the years specially for immunocompromised patients. Some bacteria are resistant to some antibiotics such as Ampicillin and Vancomycin, while other are sensitive to most antibiotics. Preventing measurement such as maintenance and charging filters should be considered as a precautionary measurement to prevent further complications.

KEYWORDS:
Air conditioning Systems, A.C systems, A.C. Unit

Poster

MLS-33

Evaluating the role of exercise in modulating inflammatory changes induced by e-cigarette smoking

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E-cigarette smoking is harmless as many claims. Toxins and harmful materials such as nicotine, propylene glycol and glycerol produced from e-cigarette smoking act as a stimulus in producing injury and oxidative stress to different tissues by elucidating inflammatory processes starting with the recruitment of cells of inflammation such as neutrophils, macrophages and lymphocytes. These cells secret elements of pro-inflammatory mediators including IL-1β, IL-6, CRP and TNF-α that mediate the initiate of the pathological abnormalities in different organs of the body by activating various inflammatory pathways including MAPK, NF-kB and JAK-STAT. Most documented pathological conditions resulting from e-cigarette smoking includes abnormalities in the respiratory system such as COPD, acute respiratory disease, cystic fibrosis, OPD and asthma, cardiovascular system abnormalities including atherosclerosis, GI tract diseases such as pancreatitis. In addition to, renal diseases including glomerulonephritis, final-stage kidney disease and acute or chronic kidney disease (CKD) and inflammation in the CNS leading to diseases in the brain. Regular physical activity was shown to reduce inflammation in many diseases. The question that is the core for this review is whether there is enough scientific literature in the medical search engine indicating a role for regular exercise in reducing the armful inflammatory-based pathological abnormalities in different organs of the body. A mini review is done using studies published in medical search engines in the past 20 years looking for terms including e-cigarette smoking, inflammation, pro and anti-inflammatory mediators and exercise. Controversial studies were published with the majority indicating a reduction in the pro-inflammatory mediators initiating disease in e-cigarette smokers and few showing an opposite result. In conclusion, the literature published investigating the role of exercise in modulating the harmful effect of e-cigarette are not conclusive, and there is a need for more studies in this field to fill in the gap present in research.

Keywords
E-cigarette, inflammation, and exercise.

Poster

MLS-34

Determination of gender-dependent references interval for coagulation indices

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The Reference interval is essential for interpretation test results and making appropriate medical clinical decision for high quality patient care.

In this study, we will see if the reference interval for coagulation profile is different between genders since there are physiological changes and biological difference between male/female.

By using various methods to measure the data to limited samples,
Manual method: Start by mixing the plasma with reagents manually. followed by the measurement clotting time and detection the clot with the naked eye by using the stopwatch.
Automated method:
(ACL TOP 750), the machine is programmed to mix the required amounts of the patient plasma and reagents. These methods work by detecting the density and turbidity once the reagent is added to plasma and and mix together, the machine starts to measure the time of clotting

coagulation Analyzers stored data:
equal number of normal results from different genders from stored data was used.

results showing that there are no significant differences in (RIs) between male and female in the coagulation profile.

From the statistical analysis on results, we obtained there is no need to make separate (RIs) for male and female. And the (RIs) used in hospitals and healthcare are accurate and reliable to make any interpretation and medical decision.

KEYWORDS:
reference interval, coagulation profile, coagulation system

Poster

MLS-35

The Effect of Metformin on Vitamin B12 Levels Among Patients With Type 2 Diabetes Mellitus

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Background: Type 2 diabetes mellitus (T2D) is a persistent metabolic condition that results in elevated blood sugar and organ damage. Treatment involves lifestyle adjustments, medications like Metformin, and sometimes insulin. Vitamin B12 (B12) deficiency was reported to be a common occurrence for T2D. Metformin and proton pump inhibitors (PPIs), part of most diabetic treatments, can reduce B12 blood levels.
Aim: This study was aimed to investigate the possible effect of Metformin and PPIs on blood B12 levels among people with T2D.
Methodology: Serum samples were collected from 56 patients with T2D, categorized according to Metformin dosage, treatment duration, and use of proton pump inhibitors. Biochemical analyses were conducted using standard assays, including glucose, HbA1c, and B12 levels.
Results: The study revealed that patients taking higher doses of Metformin (>2000 mg/day) have a significant reduction in B12 levels ($P<0.0001$) compared to those on lower doses. Similarly, individuals using PPIs exhibited lower B12 levels ($P<0.0001$) compared to those not using these medications. The combination of Metformin and PPIs further exacerbated the reduction in B12 levels.
Conclusion: Our study underscores the independent impact of both Metformin and PPIs in reducing B12 levels among individuals with T2D. Close monitoring of B12 status among diabetic patients receiving these pharmacotherapies emerges as a crucial preventive measure against associated insufficiencies. By integrating regular assessments of B12 levels into clinical practice, healthcare providers can proactively address potential deficiencies and mitigate associated health risks, thereby promoting enhanced patient care and management outcomes in this population.

KEYWORDS:
Type 2 diabetes mellitus (T2D), Metformin, Proton pump inhibitors (PPIs), Vitamin B12 deficiency

Poster

MLS-36

Iron deficiency anemia in students from Faculty of Allied Health sciences

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Background: Globally, iron deficiency anemia (IDA) is the greatest widespread type of anemia associated with inadequate nutrition. IDA is associated with neurodevelopmental delay and cognitive impairment. Screening for IDA can overcome such risks.

Objective: The aim of this project is to screen for iron deficiency anemia among students in the Faculty of Allied Health Sciences.

Materials and methods: 30 random volunteer students from faculty of Allied Health students participated in this study randomly. The screening test used was ferritin rapid test (OneStep) using one drop of blood from each volunteer.

Results: From the 30 participants, there were 7 (23.33%) males and 23 females (76.67%). 27% of the studied participants had iron deficiency anemia. According to survey, 30% had history of IDA and 53.33% of their families suffered from anemia. 16.67% took medication for iron deficiency and 80% of those who receive medication took oral supplements while 20% received intravenous iron treatment. Regarding taking any supplements, 11 (36.67%) of participants took supplements among them, took Multivitamins (36.36%) and Iron supplements (63.63%). 10.0% of studied participants followed vegetarian diet and 40.0% were on animal-based diet. Whereas 26.67% were on unhealthy diet and 23.33% were on other diets.

Conclusion: Iron deficiency anemia is one of the most common anemias in the world. The prevalence of iron deficiency anemia was 27% and only 16.67% took medication for iron deficiency. Therefore, identifying the prevalence of this anemia among students can help in treatment and better awareness and prevention of iron deficiency.

KEYWORDS:
Iron deficiency anemia ,Screening test , Faculty of allied health sciences

Poster

MLS-37

Acute Exposure To Microplastics Effect

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INTRODUCTION

The use of plastic materials in food packaging, clothing and transportation is very common all over the world. The main types of these plastics are; polyethylene terephthalate (PET), High-Density Polyethylene (HDPE), Polyvinyl Chloride (PVC), Polycarbonate (PC), Polypropylene Plastic (PP), Polystyrene (PS), poly-1, 4-cyclohexylene dimethylene terephthalate (PCDT) and others. Micro plastics (MPs) are fragments of these material with diameter of less than 5mm. They can be found in the environment, food and water. It was believed that MPs cannot enter the blood stream, however, recent studies have shown quantifiable amounts of microplastics found in the blood of healthy population. It is unknown how the plastic have entered the blood and it remains unclear if any of these plastic could cause any inflammation or damage to the body tissue in the short or long term.

AIM: to investigate the effect of these major types of plastic on the

METHODS

Twenty-four adult female spede dawly rats, six weeks in age were used in this experiment. The different types of plastics (PET, HDPE, PVC, PP, PS, PC) were made into fragments within the size range of 0.1µm to 5mm. The different MPs were fed to the animals at a dosage of 1mg/kg for one moth. The animals' weight was measured, and the liver, kidney and colon were collected from the animal and processed for histological evaluation and structural changes.

RESULTS

The highest weight gain was with the sham and PET groups with more 7% difference than the control group. On the other hand, PS, PP and PVC groups showed the lowest weight gain with 8% less than the control and 16% less than the sham group. The histologic evaluation showed no significant pathological changes. There was no fibrosis or steatosis in the kidney or liver.

CONCLUSION AND DISCUSSION

No observable structural alterations in the organ studied are observed due to the conditions and duration of exposure to microplastics in our experimental model. These results highlight the need for further research to explore other potential impact of Microplastics on organ function or to investigate different exposure scenarios.

KEYWORDS:
Microplastics, Liver, Kidney and Colonial

Poster

MLS-38

The Prevalence of Influenza virus infections during 2018

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INTRODUCTION

The influenza virus is an RNA virus that is a member of the family Orthomyxoviridae
• Seasonal influenza epidemics have been estimated to result in 3–5 million cases of severe illnesses
• The most prevalent influenza virus that causes mild to severe illness in both humans and animals during flu season is influenza A. However, Influenza B is even more contagious than influenza type A and can cause serious illness.

METHODS

At Mubarak Al Kabeer Hospital in Hawalli governate in Kuwait, sterile swabs were used to collect samples from patients exhibiting respiratory virus diseases symptoms. The emergency department staff obtained nasal or tracheal swabs as samples.

RESULTS

Just sufficient information for the reader to understand, without extensive details.
A total number of 149 cases of respiratory viruses were reported during 2018. Out of these, 9 different viruses were detected. 39 (26.1%) patients were diagnosed with influenza virus, 19 (12,7%) of them were infected with influenza A while 20 (13.4%) were influenza B. By comparing the years from January 2017 to December 2019, it was found that influenza cases in 2017 were (5.5%), (26.1%) in 2018 and (6.9%) in 2019. Influenza infection was at the peak in 2018. Female's cases (54%) were reported more than male's cases (46%) during the period (January- December 2018). The majority of cases infected with influenza virus were among adults at a rate of 79%, while the rate of infection among paediatric was 21%.

CONCLUSION

This study investigated the overall Prevalence of influenza virus during 12-month period (from January 2018 to December 2018) in Mubarak Alkabeer hospital. In general, there was a high Influenza virus prevalence especially among adults and females. We recommend investigating the prevalence of influenza virus in future among different hospitals in Kuwait including government and private hospitals to monitor the spreading of the virus and control it.

KEYWORDS:
Influenza, Virus, Prevalence

Poster

Determining the effect of splenectomy on several hematological parameters in Beta thalassemia major patients

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INTRODUCTION
Beta-thalassemia results from a point mutation in chromosomes 11. the mutation can lead to a reduction or absence of beta globin protein. Beta-thalassemia has three types: beta thalassemia minor, intermediate, major. The most sever form of beta-thalassemia is beta thalassemia major. Patients with beta-thalassemia major suffer from many complications that include hepatosplenomegaly, bone deformities, and sever anemia. Some patients with beta-thalassemia suffer from splenomegaly which make patients uncomfortable, so some doctors decide to remove the spleen. The purpose of this study is to explore the effect of splenectomy on several hematological parameters in beta thalassemia major patients.

METHODS
A retrospective analysis of data collected from a previously study was done. We reviewed Complete blood count parameters in splenectomized & non-splenectomized Beta thalassemia patients. Eighty-five patients were studied including 39 splenectomized and 46 non-splenectomized. Data were analyzed using t-test. The splenectomized group includes 23 females (58.97%) and 16 (41.02%) males with the age ranging from 19-56 year, while non splenectomized group there were 28 females (60.86%) and 18 (39.1%) males with the age ranging from 18-51 years.

RESULTS
We found that there is a significant increase in WBC and platelets count compared to non-splenectomized patients ($P < 0.001$). Also comparing to non splenectomized patients, RBCs count, splenectomized patients had higher Hct, MCV count ($P < 0.05$).

CONCLUSION
Splenectomy is a serious therapeutic treatment for patients with Beta-thalassemia major and was found to improve RBC parameters and indices but may increase susptability to infection and thrombosis as shown by higher WBC & platelets in splenectomized patients.

KEYWORDS
Thalassenmia, Hematology, Kuwait

Poster

MLS-40

The effects of energy drinks on bone marrow cells in different mouse models

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INTRODUCTION

Diabetes is a chronic disease that occurs either when the pancreas does not produce enough insulin or when the body cannot effectively use the insulin it produces. Laboratory mice provide ideal animal models for biomedical research and comparative medicine studies. Consumption of energy drinks may have adverse effects. However, little data available that investigated the effects of energy drinks in diabetic mice in bone marrow.The aim of this project was to explore the effects of energy drinks on bone marrow cells in different mouse models; control C57BL/6, diabetes type 1 NOD, and diabetes type 2 db/db.

METHODS

40 of male and female mice were used in this project, half of each group were treated with an energy drink, whereas the other half was untreated. After treatment for 2 weeks, mice were sacrificed, and bone marrow was collected. Samples were analysed for viability and apoptosis in flow cytometry and Vicell counter.

RESULTS

The results showed that both type 1 diabetes (P=0.002) and type 2 diabetes (P=0.0079) groups have higher apoptosis rates compared to the control even without treatment. The Type 2 diabetes group has a slightly higher apoptosis rate than the Type 1 diabetes group. The study also found that the viability results of all groups in flow cytometry and Vicell showed some differences.

CONCLUSION

Energy drinks affected the bone marrow of diabetic type 1 mice the most. Bone marrow cell viability was compromised diabetes even without the treatment. Further research is required to understand the underlying mechanism by which these effects are seen.

KEYWORDS

Diabetes , Mice , Energy drinks

Poster

MLS-41

Quantitative real time PCR Concordance with HER2 Immunohistochemistry in Breast Cancer Patients

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INTRODUCTION

Breast cancer with Human Epidermal Growth Factor Receptor 2 (HER2) overexpression is crucial, as it indicates aggressive tumors and poor prognosis. Accurate HER2 detection and quantification are essential for appropriate therapeutic interventions. Traditional methods like Immunohistochemistry (IHC) and Fluorescence In Situ Hybridization (FISH) are now complemented by molecular techniques such as Quantitative Real Time Polymerase Chain Reaction (qPCR). This study aims to evaluate the concordance between and IHC in determining HER2 status in breast cancer patients, seeking to enhance diagnostic precision and ultimately improve treatment decisions and patient outcomes.

METHODS

In this investigation, forty-three (43) formalin-fixed paraffin-embedded (FFPE) breast cancer tissue specimens from the Royal Hayat Hospital in Kuwait underwent examination. Immunohistochemistry (IHC) was conducted on all patient tissue samples to assess HER2 protein overexpression using the HercepTestTM kit (Dako). Furthermore, quantification of the HER2 gene was carried out utilizing the 7500 Fast Real-time PCR system. Subsequently, the relative fold changes in HER2 gene expression were determined through application of the 2^ΔΔCt method.

RESULTS

The overall concordance rate between Immunohistochemistry (IHC) and Quantitative Real Time Polymerase Chain Reaction (qPCR) was 81.39%. Out of total of Forty-Three cases, three cases showed True Positives (TP), indicating HER2 positivity, while 32 cases demonstrated True Negatives (TN), either as true negatives or where NA was considered negative. False Positives (FP) were observed in three cases, and False Negatives (FN) in five cases. Sensitivity was 0.375, specificity was 0.9142, positive predictive value (PPV) was 0.5714, negative predictive value (NPV) was 0.864, and accuracy was 0.8139. Both PCR and IHC showed reliability in detecting HER2 status.

CONCLUSION

Statistical metrics and a high concordance rate suggest that both qPCR and IHC are reliable methods for detecting the HER2 status of breast cancer patients. The significance of these findings for making therapy choices and determining patient outcomes in the management of breast cancer is significant.

KEYWORDS:
Breast Cancer, HER2, Concordance

Poster

Pulmonary Changes of Type 1 Diabetic Mice Pups Whose Mothers Were Supplemented with Carnitine

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Background: Type 1 diabetes mellitus (T1DM), an autoimmune disorder, causes insufficient insulin production, hyperglycemia, and pulmonary dysfunction. Asthma and chronic obstructive pulmonary disease are among the illnesses that may result. Recent studies have shown that L-carnitine, an amino acid derivative, have beneficial effects in the liver and kidney of type 1 diabetic mice. This is due to L-carnitine's anti-inflammatory and antioxidant properties that decrease oxidative stress and inflammation while improving glucose metabolism. The purpose of this study is to investigate the effect of L-carnitine administration in the lungs of non-obese diabetic (NOD) mouse pups whose mothers were supplemented with L-carnitine during pregnancy.

Aim: The study explores the impact of supplementation with L-carnitine on lung changes in mouse pups born to type 1 diabetic mothers who were supplemented with Carnitine in their diet during pregnancy. The goal is to enhance outcomes for at-risk individuals.

Material and method: Control mice and NOD mice were used, NOD mouse pups whose mothers were supplemented with L-carnitine during pregnancy. The pups were divided into four groups. Group 1, control mice, NOD mouse pups, divided into groups 2, 3 and 4 based on their maternal diets: Group 2 had a low carnitine diet, Group 3 had a low carnitine diet supplemented with 0.15mg/gm L-carnitine, and Group 4 had a low carnitine diet supplemented with 0.30mg/gm L-carnitine. After developing diabetes, mice were sacrificed, their lungs were removed and the pulmonary alterations were examined using Mayer's hematoxylin and Eosin, Perl's Prussian Blue, and Masson's Trichrome staining techniques,

Results: The results showed that a low-carnitine diet in mothers of NOD mouse pups might lead to severe pulmonary diabetic changes as compared to the control mice lungs, which were similar to renal and hepatic tissues. Supplementing the mothers with carnitine did not have any beneficial effect in alleviating the diabetic changes.

Discussion & Conclusion: The study's findings suggest that administering L-carnitine supplement to pregnant NOD mothers can have no impact on the lungs of their offspring. Unlike its beneficial effects on liver and kidney. However, it's important to note that the amount of carnitine given is crucial as higher doses can result in negative side effects.

Keywords:
Type 1 diabetes mellitus, Lungs, L-carnitine, pregnant mice, non-obese diabetic pups

Poster

Converting Electro-Chemiluminescent Immunoassay to an ELISA-Based Assay

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Background: Immunoassays are analytical methods that utilize the interaction between an analyte and an antibody (Ab) to determine the concentration of the analyte. The activity of a label such as radiation, fluorescence, or enzyme is measured which reflects the analyte concentration. Immunoassay techniques are widely used in crucial areas of pharmaceutical analysis, such as diagnosing illnesses, tracking medication levels during treatment, and conducting standard medicinal and bioequivalence studies in the pharmaceutical and drug development industries. There are several types of immunoassays, such as radioimmunoassay, enzyme-linked immunosorbent assay (Elisa) and chemiluminescence immunoassay (CLIA). The aim of this study is to examine the possibility of modifying the electro-chemiluminescent (ECLIA) detection method used for automated analysis in Ministry of Health (MOH) medical laboratories and change it into a colourimetric method.
Methodology: changing status of the enzyme substrate of Electro-chemiluminescent immunoassay (ECLIA) kit used in automated machine in MOH laboratories into a substrate that produce a colour and can be measured by ELISA reader.
Results: The protocol used revealed a successful interaction between Alkaline phosphatase (ALP) and the substrate (4-NPP). Incubating the reaction mix for 24-hours at room temperature (RT) and 36^0C revealed higher absorbance compared to samples incubated for one-hour. However, no significant deference was observed between incubating sample at room temperature and 36^0C. The values obtained for sample controls 1,2 and 3 showed no significant differences in the concentrations for all controls incubated at RT and at 36^0C for 1 hour (figure 1). Similar observation was noted for all controls incubated at RT and at 36^0C for 24 hours, although the concentrations were slightly elevated compared to controls incubated for 1 hour, but the difference was not statistically significant.
Conclusion: the experiment can be conducted successfully if enough time was available to investigate the kit contents and identify the stop solution as well as introducing a magnetic field to be able to do the washing step.

KEYWORDS:
ECLIA, Elisa, 4- nitrophenylphosphate (4-NPP), ALP

Poster

Impact Of Age On Several Hematological Parameters In Sickle Cell Anemia Patients In Kuwait

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INTRODUCTION

Sickle cell disease (SCD) is a prevalent monogenic disorder affecting millions worldwide, primarily in populations of African, Indian, Caribbean, Middle Eastern, and Mediterranean descent. The disease is characterized by abnormal hemoglobin S (HbS) formation due to a specific missense mutation (Glu6 Val) in the B-globin gene. Polymerization of HbS leads to sickle-shaped red blood cells, causing vaso-occlusive episodes and multi-system complications.

METHODS

We conducted a retrospective study reviewing data from 62 SCD patients (41 adults, 23 pediatrics) and 66 controls (47 adults, 19 pediatrics). Data included complete blood counts (CBC) and coagulation tests (PT, APTT) analyzed using automated hematology analyzers and ACL TOP coagulation analyzers. Statistical analysis was performed using Excel and included T-tests to compare hematological parameters between adult and pediatric patients with SCD and controls.

RESULTS

Analysis revealed significant age-related variations in hematological parameters among SCD patients and controls. Adults with SCD exhibited distinct CBC profiles compared to pediatric patients, with notable differences in hemoglobin levels, white blood cell counts, and platelet counts. Coagulation test results also demonstrated age-related differences in clotting parameters.

CONCLUSION

Our findings underscore the importance of considering age-related factors in assessing hematological parameters and managing sickle cell disease. Age-specific variations in CBC and coagulation profiles highlight the need for tailored clinical approaches to optimize care and outcomes in different age groups of SCD patients.

KEYWORDS

Sickle cell disease (SCD), Hematological parameters, Age-related differences.

Poster

The Association Between Elevated Blood Lipid and Liver Function Test

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Background: Dyslipidemia is considered as a significant factor in the development of many diseases. Accumulation of fats in the hepatocytes is a leading cause of chronic liver disease. Hyperlipidemia is Type 2 diabetes results in non-alcoholic fatty liver disease (NAFLD). Therefore, the aim of this study was to investigate the association of hyperlipidemia with liver function tests.

Methodology: Serum samples were collected from 47 type 2 diabetics with hyperlipidemia, aged 55 to 67 years (group A) and from 31 healthy individuals aged 45 to 64 years with normal lipid profile (group B). Liver function test; ALP, AST, ALT, CK and Albumin. Lipid profile; Triglyceride, Total Cholesterol, LDL and HDL were also tested. Comparison between the groups was performed by using an unpaired two-tailed student`s t-test. A p value of < 0.05 was considered as the minimum level of significance.

Results: For LDL was a notably ($p<0.001$) higher in group A compared to group B, while HDL were significantly ($p<0.001$) lower in group A compared to group B. Additionally, total cholesterol in group A was significantly ($p<0.001$) higher than those in group B. Triglyceride (TG) levels were substantially elevated in hyperlipidemic patients compared to healthy subjects ($p<0.001$). The liver function revealed that ALP and ALT levels were significantly ($p<0.01$) and ($p<0.009$) increased respectively among group A compared to group B. Additionally, the results for creatine kinase levels demonstrated a significant ($p<0.001$) elevation in hyperlipidemic patients compared to healthy subjects. However, no significant differences were observed for AST levels between the two groups.

Conclusion: our results suggest that individuals with Type 2 diabetes and elevated lipid levels, especially triglycerides, experienced negative impacts on liver function enzymes, thus confirming the presence of Non-Alcoholic Fatty Liver Disease (NAFLD) in these patients.

KEYWORDS:
Non-Alcoholic fatty liver disease, Hyperlipidemia, Type 2 diabetes, Liver enzymes

Poster

MLS-46

Microenvironment Mastery by Chronic Lymphocytic Leukemia Guardians: T-Cell Infiltration

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Background: Chronic lymphocytic leukemia (CLL) presents a complex clinical spectrum, marked by the aberrant proliferation of mature B cells and subsequent immune compromise. While it is more prevalent in Western populations, CLL incidence is notably reduced among Asian and Middle Eastern individuals exhibiting distinct genetic mutation profiles. Treatment strategies, ranging from chemotherapy to immunotherapy, aim to target CLL cells and their microenvironment. Our study delved into the intricate immune dysregulation within CLL with the aim of advancing tailored therapeutic interventions and improving patient outcomes.
Aim: This project aims to identify variations in T-cell expression between CLL patients and controls, with the goal of uncovering potential biological markers of interest.
Method: Flow cytometry analysis is routinely performed for CLL patients and patients suspected of having blood malignancies. Retrospective data from routine flow cytometry were retrieved and reanalyzed, focusing on immune markers using FlowJo [software], implementing a specific gating strategy to assess T-cell characteristics. Statistical analysis was performed using GraphPad Prism [software], encompassing descriptive analysis and t-tests to compare T-cell attributes between CLL and control groups, with significance determined at $p < 0.05$.
Results: The demographic analysis revealed that CLL patients were significantly older compared to control subjects (p-value= 0.0012), but there were no significant gender distribution differences between the groups. Flow cytometry analysis demonstrated significantly lower CD3+ cell counts in CLL patients compared to controls (mean =8.869±SD, P -value = <0.0001), along with significant differences in CD4+ CD8+ ($P < 0.0001$) and CD4- CD8- ($P = 0.0043$) cell populations. Although CD4+ cell differences did not reach statistical significance ($P = 0.8544$). These findings underscore the importance of immune cell profiling in CLL, potentially contributing to a deeper understanding of disease pathogenesis and immunodeficiency.
Conclusion: While significant differences were observed in various immune cell populations between CLL patients and controls, the notable age difference between CLL patients and controls underscores the necessity of selecting more suitable control subjects to minimize the influence of age on the variance in immune cell repertoire. However, our findings deepen our understanding of immune dysregulation in CLL and may inform the development of targeted therapeutic interventions to restore immune balance in affected individuals.

Keywords
Chronic Lymphocytic Leukemia (CLL), Kuwait, immune microenvironment, flow cytometry analysis, T-cell, immunotherapy, CD markers, disease pathogenesis.

Poster

Occupational Therapy (OT)

OT Awards

	No.	Name	Title	Poster
1	OT-12	Dhuha Alshammari, Manal Alenezi, Moudhi Alotaibi, Wdha Almutairi	The Application of Stress Management Program among Health Science Center Students at Kuwait university: Outcomes and Implications	View
2	OT-06	Dana Alsaeedi, Nouraa Alqahs, Razan Alrashidi	The Effect of Occupational Therapy Online Educational Intervention in Enhancing the Quality of Life and Reducing the Burden for Caregivers of The Elderly with Alzheimer's Disease	View

OT-01

The Level of Assistance that Children with Disabilities Require to participate in Play and Leisure Activities: A Cross-Sectional Study

Abdulaziz Alfadhli, Hamad Alabdulwahab, Hassan Albahrani, Wejoud Shareef.
Supervised by Dr. Zainab Jasem, *Occupational Therapy Department, Faculty of Allied Health Sciences, Kuwait University, Kuwait*

Introduction: It is reported that mothers of children with disabilities provide a large amount of assistance to their children while participating in play or leisure. There has been a lack of research regarding the level of assistance that a mother provides for her child with a disability in relation to the mother's psychological wellbeing. The purpose of this study was to measure the level of assistance children with disabilities need from their mothers to participate in play and leisure activities and investigate the relationship between the level of assistance provided for children with disabilities, and their mothers' psychological wellbeing. And exploring the factors that contribute to the amount of assistance that children with disabilities need in play and leisure.

Method: A quantitative cross-sectional correlational study was conducted on mothers with disabilities. We excluded mothers who are not the primary caregiver of their child, as well as mothers with more than one child who has a disability. The two assessments used were Assistance to Participate Scale (APS), and Depression, Anxiety, Stress Scale (DASS).

Results: The study included N = 100 participants of mothers of children with disabilities. APS overall final score was $\mu = 26.74 \pm 7.545$ and most mothers provided low level of assistance to their children in play and leisure (n=56). Results showed that most children require less assistance in their homes (Total APS Home was $\mu = 15.19 \pm 3.966$) than in their outside communities (Total APS Community was $\mu = 11.55 \pm 4.489$). While for the DASS-21 overall final score, results indicated that most mothers showed symptoms of psychological distress. Yet, Anxiety was the most common psychological condition found between mothers of children with disabilities (total anxiety) score was $\mu = 13.28 \pm 10.634$.

Conclusion: This present study showed no significant relationship between the level of assistance in leisure and play and mothers' psychological well-being. Yet, DASS-21 indicated the presence of psychological distress symptoms among the mothers. Implications for practice include early health promotion and illness prevention targeting all mothers of children with mental health disabilities.

Keywords: Depression, Anxiety, Stress, Dependance, Caregiver

Poster

OT-02

The Influence of Energy Conservation Techniques on Level of Fatigue, Achieving Personal Goals, Quality of Sleep Among Patients with Multiple Scoliosis in The State of Kuwait

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Wahaj Al-Otaibi, DR. Mohammad Al-Shehab, Occupational Therapy Department
Kuwait University Faculty of Allied Health Science Kuwait

Introduction: Multiple sclerosis (MS) is a neurodegenerative disease with physical fatigue as a main symptom that affects functioning in daily life. Energy conservation techniques (ECT) are used to limit negative influences of fatigue, which would improve their functioning level to enhance patients' overall quality of life. The purpose of this study is to investigate the effectiveness of the ECT on three domains: (1) the level of fatigue, (2) quality of sleep (QOS) and (3) achieving personal goals in patients with MS.

Methods: This study used case study design with pre and post design**.** Participants who are less than 18 years old, received any ECT in the last 6 months, or have respiratory and heart diseases were excluded from the study. This study utilized the following standardized outcome measures: the Canadian Occupational Performance Measure (COPM), the Pittsburg Sleep Quality Index (PSQI) and the Brief Fatigue Inventory Assessment (BFI-A). Descriptive statistics will demonstrate change/ score and the absolute value will be used to calculate the difference between post-measurements subtracted by pre-measurements in every assessment or it will be illustrated in the graphs.

Results: The study sample included (4) participants (3 female and 1 male) with a mean age of 53 years and standard deviation ± 13.8 years. All participants were recruited from two governmental hospitals in Kuwait. Regarding level of fatigue, only one out of four participants showed a decrease in level of fatigue. In the personal goals domain, moreover, none of the participants showed significant change in achieving their personal goals. Finally, in the quality of sleep domain, two of the four participants showed a decrease and the other two showed an increase in their QOS.

Conclusion: Using the ECT with MS patients could be beneficial for the participants, whose condition is free from a recent attack, and who adhere to the ECT instructions. These findings are limited to the small sample size and the study design.

Keywords: Case study – Canadian occupational performance measure - quality of life – brief fatigue inventory - Pittsburg Sleep Quality Index**.**

Poster

OT-03

Unveiling Motherhood: The Impact of Maternal Physical & Mental, and Contextual Influences on Postpartum Occupations in Kuwait – A Mixed Methods Study (Phase One)

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INTRODUCTION
The interplay between maternal physical and mental health, alongside contextual factors may significantly shape postpartum occupations. Understanding these dynamics is crucial for comprehensive support and well-being of mothers during the postpartum period in the Kuwaiti context. Moreover, the purpose of this study is to provide a better understanding of the physical and psychological challenges mothers face and the barriers that might influence maternal perceptions of diverse roles and their engagement in occupations.

METHODS
The study employed a mixed methods design. 346 participants were included in this study. In phase one, the qualitative segment utilized statistical analyses of Chi-square, Kruskal Wallis and Pearson correlation coefficient. The quantitative component involved structured survey assessments of a total of 45 questions (i.e., Body Mass Index, Body Shape Questionnaire, Depression Anxiety Stress Scale and Barkin Index for Maternal Functioning). Ethical approval granted, with reference number (EC/R:579). The study will integrate both quantitative and qualitative approaches to provide a comprehensive perspective on the subject matter.

RESULTS
Kruskal-Wallis, Chi-Square and Pearson Correlation Coefficient tests were utilized to investigate the effect of physical and mental health in the postpartum period. Findings showed an association between demographic factors and motherhood occupations, revealing significant links between feeding, type of support, sleep and complications, consultation, educational level with respective p-values of 0.053, 0.01, 0.001. Furthermore, body mass index and body shape concerns were found to be positively correlated, and there were noteworthy relationships found between body shape concerns and mental health factors. Further significance was found in BIMF subtest (i.e., psychological well-being) with a p- value = 0.009 and physical activity.

CONCLUSION
The findings of this study underscore the affected factor in postpartum experiences and the interplay between demographic variables and various aspects of postpartum mental and physical health. The complex interdependencies between physical and mental health factors highlight the importance of a comprehensive approach to the care and support of postpartum women

KEYWORDS:
Motherhood , maternal functioning , mental health , physical health , postpartum period

Poster

OT-04

Descriptive Study of Dentists with Injuries Practicing in The State of Kuwait

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INTRODUCTION
Occupational injuries considerably impact the health and economic status of the individual, family, and workplace, increasing absenteeism and reducing productivity.
Studies have shown that dental professionals are at a higher risk of occupational injuries than other medical professionals due to their exposure to specific working conditions. Therefore, the study examined the range of motion of the cervical, wrist, and thoracolumbar joints and associated risk factors of working dentists with injuries in Kuwait.

METHODS
This study employed a descriptive design. A self-administered questionnaire, specifically tailored to the dental profession, was distributed to dentists at government and private clinics in Kuwait. A goniometer was used to measure the cervical and wrist, and a metric tape was used to measure the thoracolumbar.

RESULTS
The study included 56 dentists with injuries. Most dentists with injuries were general dentists (54%) and paediatric dentists (30%). The most common types of injuries were muscle strain (45%) and muscle strain (23%). The most affected anatomical areas were the back (30%), shoulder and neck (29%). Reporting of a combination of injuries, neck and shoulder (47%) were the most common. The activities leading to injury were bending or twisting (25%), maintaining a position for a prolonged period (20%), and working in an awkward or cramped position (14%) being the most common. A concerning finding was that 61% of participants continued working despite experiencing pain, which was exacerbated by clinical practice in 71% of cases and loss of workdays due to pain (66%). Additionally, 75% reported that pain affected their daily participation. The results showed that most joints' range of motion was abnormal.

CONCLUSION
The findings suggest that dentists with injuries experience muscle strain as the most common injury, back, neck, and shoulder injuries as the most common body part injuries, and bending and twisting, and faulty posture as the most common causes of injury. Work activity is a significant risk factor leading to injuries among dentists. The health problem among dentists is manifested in the joints' limited range of motion. Overall, addressing ergonomic factors and promoting workplace modification could significantly improve the well-being and productivity of dental professionals.

KEYWORDS: musculoskeletal injuries, neck, shoulder, muscle spasm, posture

Poster

OT-05

The Impact of Years of Practice on the Range of Motion of the Cervical, Wrist, and Thoracolumbar Among Dentists in Kuwait.

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INTRODUCTION
Musculoskeletal disorders (MSDs) are soft-tissue injuries caused by sudden or sustained exposure to repetitive motion, force, vibration, and awkward positions. The most prevalent MSDs are associated with the workplace. Studies showed that there is a high prevalence of MSDs among dentists that may affect Range of motion (ROM). However, few studies examined the possibility of MSDs and risk factors for ROM among dentists.

METHODS
This study used a correlation cross-sectional, descriptive design. A self-administered questionnaire was distributed to dentists at government and private clinics in Kuwait. Measurements of the cervical and wrist were taken using a goniometer and the thoracolumbar using a metric tape.

RESULTS
A total of 150 participants were measured after they completed the questionnaire. The number of Years of Practice among the participants ranged from 1 to 44 years, with a mean of 11.97 ± 10.202. The study findings showed that there was a significant correction with Years of Practice and Cervical flexion ($p = 0.009$), Cervical extension ($p = < 0.001$) , Right cervical rotation ($p = 0.048$), Left cervical rotation ($p = 0.021$), Right cervical lateral flexion ($p = 0.033$), Left cervical lateral flexion (0.033), Right radial deviation ($p = 0.026$), right wrist extension ($p = .001$), and Left wrist extension ($p = 0.006$) . Also, the results of the Mann-Whitney U test showed statical differences between Abnormal and Normal ROM on Cervical flexion ($p = 0.049$), Cervical extension ($p = 0.05$), Right cervical rotation ($p = 0.048$), Right cervical lateral flexion ($p = 0.009$) and Right wrist extension ($p = 0.002$).

CONCLUSION
In conclusion, this study highlighted the significant impact of years of practice on the joints' ROM, specifically on the cervical spine, among dentists in Kuwait.

KEYWORDS:
Musculoskeletal disorders, goniometer, prolonged posture.

Poster

OT-06

The Effect of Occupational Therapy Online Educational Intervention in Enhancing the Quality of Life and Reducing the Burden for Caregivers of the Elderly with Alzheimer's Disease

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INTRODUCTION
As the prevalence of Alzheimer's continues to rise, the role of caregivers becomes paramount in providing comprehensive care and support, which contributes to the development of caregivers' burden and poor quality of life. The purpose of the research was to assess the impact of occupational therapy online educational intervention course on caregiver's quality of life and burden of care.

METHODS
A total of 10 caregivers of the elderly with Alzheimer's disease (AD) were recruited for this study. The study design was a quasi-experimental design, in which information was collected at two time points: pre- and post-the online educational intervention course by a survey including the Arabic World Health Organization Quality of Life questionnaire (WHOQOL) and the Arabic version of the Zarit Burden Interview. Different educational training sessions were provided online. Descriptive statistics was used to summarize the characteristics of the sample. A paired-sample t-test was used to check for a significant difference in scale scores between the pre and post-periods (0.05 level of significance was used). The ethical approval number was (626).

RESULTS
The results showed significant difference in the quality of life and caregiving burden pre- and post-the online occupational therapy educational intervention sessions (P-value = 0.029 and p-value = 0.012, respectively). The QoL average score increased significantly from 56.67 (SD = 21.38) in the pre-training, to 64.06 (SD = 20.41) in the post-training. Also, the average caregiving burden score has reduced significantly from 61.04 (SD = 18.53) in the pre-training, to 53.13 (SD = 19.72) in the post-training.

CONCLUSION
Findings confirm that the expanded implementation of occupational therapy online educational intervention course for caregivers of the elderly with Alzheimer's disease can be beneficial for the caregivers.

KEYWORDS:
Caregivers, Alzheimer's disease, Zarit burden of care, quality of life, occupational therapy interventions

Poster

OT-07

Community Participation of Children with Disabilities: A Cross-Sectional Study

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INTRODUCTION
Participation of children in various aspects of life is crucial for their development and well-being. In comparison to children who are typically developing, children with disabilities experience participation restrictions. The physical, social, and cognitive activity demands and family factors like the socio-economic disadvantage were the main areas identified as the greatest barriers for children with disabilities. Another aspect that was consistently associated with reduced levels of participation was parental state of psychological well-being.

PURPOSE
The aim of this study is to measure the level of participation of children with disabilities in the community and the level of participation restriction they might face.

METHODS
A cross-sectional design was employed. Data were collected from mothers of children with disabilities from government hospitals and private centers. The study utilized the MyFACE, DASS, and PedsQL scales. Statistical analysis was conducted using the Statistical Package for the Social Sciences (SPSS, version 28.0.1), employing descriptive statistics to summarize demographic data and correlation coefficient tests, Mann-Whitney tests, Kruskal-Wallis tests, and chi-square tests for analysis.

RESULTS
The study included N = 113 mothers of children with disabilities aged from (4-18). MyFACE scale final score was $\mu = 21.12 \pm 8.12$ with level of community engagement
of 7.08% poor, 34.51% low, 45.13% moderate, and 13.27% high. Mann-Whitney test on MyFACE scale scores showed significant difference with mothers who receives assistance for caring ($\mu=61$) than the mothers who don't ($\mu=50$); $U=1225$, $p=0.041$. Also, test results showed that children who attends school ($\mu=60.6$) was statistically significantly higher than children who does not attend school ($\mu=41.2$); $U=634.5$, $p=0.008$. The PedsQL final score was $\mu = 57.11 \pm 21.523$. The Kruskal-Wallis test statical difference between total score of PedsQL measure and MyFACE scale ($p=0.048$). Approximately 48 % of mothers reported that their child's behaviors were the most reported barrier to community participation.

CONCLUSION
Our research highlighted the relationship between several factors that impact children's engagement in the community, extending from parental concerns and support systems for mothers to social perceptions of disabilities. We may aspire to create more welcoming and encouraging environments that encourage all children to actively participate in community events by addressing these problems.

KEYWORDS:
Engagement, Environmental factors, Barriers

Poster

OT-08

Attitude towards artificial intelligence among faculty staff at Kuwait University's health science center: A cross-sectional study

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Introduction: Over recent decades , Artificial Intelligence (AI) has increasingly been into , enhancing services delivery through advanced technological innovations . In the Middle East , the adoption of AI in healthcare applications, such as diagnostics aid and patient data management , has been significantly . Despite this ,many faculty staff across the globe exhibit limited familiarity with AI and its application . This study aims to assess the attitudes of the Health Science Center (HSC) faculty towards AI and examining the influence of various demographic factors on these attitudes.
Methodology: This descriptive cross-sectional study employed a quantitative approach . Ethical approval was granted from Kuwait University Ethical Review Board (No.575). A total of 43 faculty staff at HSC completed an online questionnaires distributed via convenience sampling .The questionnaire divided into three sections : including demographic data , and two standardized assessments (GAAIS, AIAS-4). Statistical analysis was conducted using the Mann-Whitney U test to compare assessments scores and The Kruskal-Wallis test to explore association between demographic variables and attitude.

Results :The findings indicates a generally positive attitude towards AI among the faculty staff , with 72.1% holding PhD degrees . Faculty members from the Allied Health Sciences scored the lowest on average compared to other departments. The study found that faculty type was the only demographic factor significantly associated with attitudes toward AI .

Conclusion : The research highlights a positive perspective towards AI among faculty staff at the HSC , though concerns about AI potentially replacing human roles in healthcare persist . To address these concerns and enhance AI integration, it is recommended that practical training sessions such as seminars and workshops be implemented. Such initiatives can promote a more profound understanding of AI's capabilities and ethical considerations, facilitating its more effective incorporation into educational programs.

Keywords: GAAIS — AIAS-4 — perception

Poster

OT-09

Attitude towards artificial intelligence among student at Kuwait University's health science center: A cross-sectional study

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Introduction: The integration of Artificial Intelligence (AI) in healthcare has seen a global rise, promising to revolutionize the sector by enhancing delivery through advanced technological solutions. In the Middle East, there has been a notable adoption of AI across healthcare applications, such as diagnostics aid and patient data management. Despite its growing relevance, a gap in familiarity and understanding of AI persists among healthcare students. This study aims to assess the attitudes of student at Health Science Center (HSC) at Kuwait University towards AI, examining how demographic factors influence these attitudes.

Methodology: This descriptive cross-sectional study employed a quantitative approach. Ethical approval was granted from Kuwait University Ethical Review Board (No.575). A total of 605 students at HSC completed an online questionnaire distributed via convenience sampling. The questionnaire divided into three sections: including demographic data, and two standardized assessments (GAAIS, AIAS-4). Statistical analysis was conducted using the Mann-Whitney U test to compare assessments scores and The Kruskal-Walli's test to explore association between demographic variables and attitude.

Results: The result indicates a generally positive attitude towards AI, as evidenced by both for both assessments. Significantly associated were found between attitude and gender in both GAAIS and AIAS-4. Additionally, nationality, GPA, and major are significantly associated with attitudes as measured by the AIAS-4.

Conclusion: The study evaluates the attitude towards AI among student at HSC. The findings revealed tendency toward positive attitudes toward AI. However, there are there is suspicion about its potential to replace human roles. Education about ethical AI use to enhance trust and understanding among students should be considered.

Keywords: GAAIS — AIAS-4 — perception

Poster

OT-10

Quality of Life Among Caregivers of Children and Adolescents with Autism Spectrum Disorder in Kuwait: A Cross-Sectional Study

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Introduction:
Autism Spectrum Disorder (ASD) is a broad neurological condition that significantly impairs the communication and social functioning of affected children. Quality of Life (QoL), a multifaceted and multidimensional construct, is essential for comprehensively evaluating both positive and negative adaptations across various functional domains. Caring for children with ASD often places substantial stress on caregivers, adversely impacting their QoL. To date, research focusing on the QoL of caregivers of children with autism in Kuwait is an area with limited research. This study addresses this gap by evaluating the QoL of caregivers of children and adolescents with ASD in Kuwait and explores the necessary support to enhance their well-being.

Methods:
This descriptive cross-sectional study included caregivers of children and adolescents with ASD aged between 18 and 75 years, covering both genders but excluding paid caregivers. Data was collected via social media platforms and visits to Autism Centers. The Quality of Life was assessed using a stadarized assessment called the Autistic Spectrum Disorder Parent/Caregiver Quality of Life (ASDPC-QoL) questionnaire, which consists of 28 items across four domains: social, concerns, physical, and mental health. This instrument has been validated for its reproducibility, reliability, internal consistency, responsiveness, and validity. Ethical approval was granted from the Ethical Review Board of Kuwait University, approval number 574.

Results:
The study surveyed 130 caregivers, predominantly female (69.2%), Kuwaiti nationals (91.5%), aged 30-49 years (66.9%), with educational qualifications at the diploma or bachelor level (86.2%), and mostly mothers of the child with ASD (68.5%). Families typically consisted of 4-9 members, with a majority having 4-6 members. The findings revealed average QoL scores ranging from 61 to 69.8 across different dimensions, with physical health scoring the lowest and mental health the highest. This suggests a moderate QoL among the caregivers in Kuwait.

Conclusion:
The study highlighted gender differences in mental health outcomes, with females reporting lower mental health scores. Caregivers with higher monthly incomes tended to report better social QoL. Furthermore, parents of children with ASD face increased risks of negative marital outcomes, such as low marital satisfaction and higher divorce rates, underscoring the substantial challenges these families endure.

Keywords: Neurological Disorders, Family Dynamic, Mental Health

Poster

OT-11

Knowledge and Awareness Among Caregivers of Children and Adolescents with Autism Spectrum Disorder in Kuwait: A Cross-Sectional Study

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Introduction:
Autism Spectrum Disorder (ASD) is a neurodevelopmental condition that affects social communication and is marked by restricted and repetitive behaviors. In Kuwait, where autism rates are notably high, the role of caregivers in understanding these signs early is crucial. Early detection can lead to quicker diagnoses and better support for children. This study evaluates the knowledge and awareness of caregivers of children with ASD in Kuwait, aiming to highlight areas where more education and support are needed to enhance caregivers' effectiveness.

Methods:
This descriptive, cross-sectional study targeted primary caregivers of children and adolescents diagnosed with ASD, aged 18 to 75 years, excluding professional paid caregivers. The survey designed for this study comprised a comprehensive assessment of knowledge and awareness. The knowledge component utilized a set of 31 questions addressing various aspects such as general knowledge of autism, clinical features, social effects, consequences of the disorder, and perceptions of its curability. Before data collection, the survey was tested for content validity index (CVI) to ensure relevance and accuracy and was distributed to a pilot group of 20 occupational therapists. Recruitment was conducted via social media platforms and from Autism Centers within Kuwait. Ethical approval was granted from the Ethical Review Board of Kuwait University, approval number 574.

Results:
The survey included 130 caregivers, primarily females (69.2%), Kuwaitis (91.5%), aged 30-49 (66.9%), with a diploma or Bachelor's degree (86.2%), and mothers of children with ASD (68.5%). Most families consisted of 4 to 9 members. The results showed that the average caregiver answered only 50.72% of the questions correctly, indicating a generally low level of ASD knowledge.

Conclusion:
The study found a significant gap in caregivers' knowledge and awareness of ASD. However, it also revealed a potential for improvement. Many participants held incorrect beliefs about the curability of ASD and overestimated the presence of exceptional abilities in children with ASD, contrary to what the literature suggests. Caregivers with higher educational levels displayed a better understanding and knowledge of ASD. This underlines the need for targeted educational programs to bridge these knowledge gaps and support caregivers more effectively.

KEYWORDS:
Neurodevelopmental Disorders, Caregiver Education, Perception

Poster

OT-12

The Application of Stress Management Program among Health Science Center (HSC) Students at Kuwait University: Outcomes and Implications

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Background:
Students at the university face a variety of stressors unique to this stage of life, Thus, it is important to emphasize the need for developing a stress management program for students to address their potential faced challenges at their faculty.

Purpose:
The purpose of this research was to study the effectiveness of the stress management program on students of health science center at Kuwait University.

Method:
In order to serve the study purpose, the study utilized a two-arm randomized control research design in which the participants were randomly assigned into one of two groups, (1): control group (no intervention), (2): intervention group, who received a comprehensive educational seminar (presentation and written hand-outs) relevant to stress management program; the seminar addressed nine topics pertained to stress management strategies including breathing and imagery technique, self-care routine, planning for success, meditation strategies, monitoring mechanism for coping, seeking help for mental health, exercise and health, cognitive behavioral therapy tips and psychoeducation. In addition to the demographic data of the study participants, data were collected using the following validated tools: (1) Perceived Stress Scale and (2) Depression, Anxiety, and Stress Scale- 21. Wilcoxon-sign rank or Kruskal-Wallis tests were used to investigate statistically significant differences between the median scores of the control and intervention groups.

Result:
In total, 98 participants participated in the stress management program (56 participants in the intervention group; 42 participants in the control group). There was a significant improvement in stress and depression of the intervention group compared with the control group (p-values < 0.05). With regards to the reflection of intervention group regarding the value of stress management program, the results showed that 82.1% agreed that the program was useful while 89.3% agreed that they would recommend other students to utilize this program in the future.

Conclusion:
This study developed, implemented, and evaluated the effect of Stress Management Program among HSC students. The program improved HSC students' mental health while reducing their depression and stress levels. The study findings provide important information that can be applied to the design of future studies or mental health resources in university programs.

Keyword:
Psychological Disorders, Coping, Self-care routine, Meditation, Cognitive behavioral therapy

Poster

OT-13

Exploring the Relationship Between Device Use on Active and Social Play Among School-Age Children – a pilot study

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Supervised by Mohammad Alshehab, PhD, OTR

Background:
Due to their abundance of entertaining and instructive activities, smart devices have became a significant part of children's lives. Some, nevertheless, are concerned that children's device use may cut into their amount of active playtime.

Purpose:
This study aims to investigate the relationship between children's usage of smart devices and their active and social play.

Methods:
Using a one-time survey, the study examined how and how often children aged 6 to 12 plays actively on smart devices. Participants shared an online questionnaire with the researchers, and they utilized certain methods to gauge how much time they spent playing actively and socially and watching devices.

Results:
Of the 140 individuals, 78 satisfied the criteria needed to be a part of the research. The average age of the participants was 8.3 years. Because they had more free time and predictable routines, the study revealed that youngsters used devices less throughout the week. However, due to legal guardians ' desire for device-based activities, cultural customs, and flexible schedules, device use rose on weekends.

Conclusion:
Device time and physical play are negatively correlated, and this relationship is influenced by a variety of factors like regular weekdays, cultural norms, and legal guardians al supervision. It's important to find a balance between playing outside and utilizing smart devices for kids' overall development

KEYWORDS:
Screen time, Physical activity, Legal guardians' involvement

Poster

Physical Therapy (PT)

PT Awards

	No.	Name	Title	Poster
1	PT-04	Shrefah Almutairi, Fay Alrashed, Aisha Ehlal, Hessa Alfares, Batoul Alqallaf, Mashael Alotaibi	The Prevalence of Flatfoot and its Associated Factors among Physical Therapy Students at Kuwait University	View
2	PT-03	Nour ALFadhli, Omaima ALAsfour, Abdullah Shihab, Mohammad ALKandari, Nourah ALYahyouh, Latifa ALObaid	Does Kinesiology Tape Re-Educate The Neuromuscular Junction And Increase Muscle Strength?	View

PT-01

The Perception of physiotherapists in Kuwait about Interacting with their Patient Who Suffer from Mental Illness

Nahrawan jowhar ,Sarah Alflaij, Hajar Alfadhli, ,Mohemmad Shehab, Abdullah alsadi ,Bassem Mahmoud ,Essa alrashed. Supervised by: Dr. Latifah Alenezi
Physical Therapy Department, Faculty of Allied Health Sciences, Kuwait University

Introduction:
A dysfunction in an individual's thoughts, behaviour, motivation, and emotions can impact their psychological wellbeing and lead to mental illness. This leads to a disturbance in the body's internal functions and results in the person feeling or acting in a manner that is not suitable. Depression and anxiety account for a significant proportion of global disease burdens. Interaction is the pleasant, supportive, and cooperative relationship that exists between the patient and the therapist. The therapeutic process revolves around the relationship between the patient and the therapist, which has been seen as a key factor in determining the treatment outcome, which showed a positive impact. Information in the literature about how physiotherapist interact with their patients who suffer from mental illness in Kuwait is not available. *The purpose* of this study was to explore the perception of physiotherapists about interaction with their patients who suffer from mental illness.

Method:
Study Design: Qualitative approach; semi-structured interviews. This study was proceeded by a pilot study including four participants who their data were excluded from the current study. *Participants*: Eight physiotherapists participated through eights interviews. *Setting:* Different physical therapy departments in governmental hospitals in Kuwait. Data was collected by face-to-face semi-structured interview from Feb to May 2024. *Data collection* started immediately after obtaining the ethical approval from KU and MOH. Data collection and data analysis were done simultaneously. Data was collected until theoretical saturation. *Data Analysis*: All interviews were transcribed. Data were analyzed using thematical analysis.

Results:
Eight descriptive themes developed from the data collected in this study reveals lack of knowledge, training, and confidence of physiotherapists in interacting with their patients who suffer from mental illness.

Discussion:
This study is distinctive since it is the first qualificative study conducted in Kuwait exploring the perception of physiotherapists about their interaction with their patients who suffer from mental illness problems.

Conclusion:
Physiotherapists in Kuwait face a hard time related to the management of patients with mental illness. Some physiotherapists felt confident and competent while handling patients with mental illness as far as others expressed having lots of gaps in their skills and knowledge.

Keywords: Exploration, Interaction, Mental illness, Physiotherapist, Kuwait.

Poster

PT-02

The Effect of Unilateral and Bilateral Straps Carrying Bags on Equilibrium among FAHS Students in Kuwait University

Adhwa Almutairi, Ruya Almahdi, Maha Alkhames, Amar Alkhaldi, Dareen Mansour, Rawan Alzoubi, Sara Albahrouh, PT, MSc
Physical therapy department, Faculty of allied health sciences, Kuwait University.

Background: Students commonly carry unilateral or bilateral strap bag at university . This affects equilibrium and postural control, increasing fall risks.

Aim: To investigate the impact of unilateral and bilateral bag on equilibrium and falling risk among (FAHS) students in Kuwait University.

Methods: Quantitative one-way repeated measures design , Convenience sampling . 39 students of FAHS in Kuwait university aged 18 – 25 years . Demographic data is collected . To calculate BMI, Height and weight are measured using Detecto scale . Two tests : step test assesses fall risks, Balance Master measures postural sway. Each in three conditions: without , unilateral, bilateral strap bag.

Data Analysis: SPSS software was used to conduct statistical analyses. The main tools used were descriptive statistics. general information (age, gender, BMI, exercising, having medical problems) and the scores of the step /SOTcomp tests. Multiple linear regression to check for the multivariate associations and Regression assumptions evaluation tools: Shapiro-Wilk test for normality; Breusch-Pagan's test for homoskedasticity; Cook's distance for outliers; VIF for multicollinearity. R-Project Programming Software (V.4.1.3) was partially used to redo the regression analysis. All tests were conducted under 0.05 level of significance.

Results: Sensory Organization Test (SOT), there is no significant differences in postural sway among all three conditions ($p > 0.005$). Active students have significantly higher SOT2comp and SOT3comp scores ($p < 0.021$) . Students with medical history showed higher SOT3comp scores ($p < 0.011$) . In the step test, Group 1 (no bag) not significantly different from Group 2 (unilateral bag) ($p > 0.05$). Group 1 significantly different from Group 3 (backpack) only in Stnone-R and Stbi-R comparisons ($p < 0.05$). Group 2 significantly different from Group 3 only in Stuni-R and Stbi-R comparisons ($p < 0.05$).

Conclusion: The study show : elder students or those with high BMI have high fall risk and less postural control . Student with medical history shows better postural control with bilateral strap bag . Exercising shows better postural control and less fall risks.

Keywords: Equilibrium, Risk of falling, Unilateral strap bag, Bilateral strap bag

Poster

PT-03

Does Kinesiology Tape Re-Educate The Neuromuscular Junction And Increase Muscle Strength?

Nour ALFadhli – Omaima ALAsfour – Abdullah Shihab – Mohammad ALKandari – Nourah ALYahyouh – Latifa ALObaid
Supervisor: Dr Talal ALShatti
Physical Therapy Dept, Faculty of Allied Health Sciences, Kuwait University

Background:
One of the stated benefits of kinesiology tape is to improve muscle tone and strength. H-reflex can be used to understand the neuro-physiological effect of kinesiology tape on muscles.

Aim:
The research aimed to study the effect of the application of kinesiology tape on muscle strength.

Methods:
Seventy healthy subjects (32 male and 38 female, age 21-405) were recruited randomly from health science center students at Kuwait University. The participants were separated into three categories. At random, a control and two experimental groups. Kinesiology tape was placed on the flexor carpi radialis muscle, and H-reflex and muscle strength will be recorded pre and post-taping in three different time intervals. (IRB # 637)

Results:
Analysis of variance ANOVA showed no statistical difference in muscle strength in gram nor in H-reflex between all three groups before applying kinesiology taping, immediately after taping, 2 hours after taping, and 24 hours after taping. The excitatory group showed a slight increase in H-reflex amplitude over the 24 hours after taping, whereas. The inhibitory group showed a slight decrease in H-reflex amplitude over the 24 hours after taping.

Conclusion:
Although these changes were not statistically significant, kinesiology tape might need to be applied for a longer period to activate the neuromuscular connections.

Keywords : Kinesiology Tape – Muscle Strength – Neuromuscular Circuit – Hreflex

Poster

PT-04

The Prevalence of Flatfoot and its Associated Factors among Physical Therapy Students at Kuwait University

Shrefah Almutairi, Fay Alrashed, Aisha Ehlal, Hessa Alfares, Batoul Alqallaf, Mashael Alotaibi
Supervisor: Dr. Sameera Aljadi
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Introduction:
Flatfoot (pes planus) is one of the most common deformities that can affect the foot alignment, leading to many musculoskeletal problems. This study aims to investigate the prevalence of flatfoot and its associated risk factors among Physical Therapy Students at Kuwait University.

Subjects and methods:
A cross-sectional study was conducted among 157 Physical Therapy students aged between 18-35 years. Students completed a sociodemographic sheet. REEDCO postural sheet was used to assess their posture. Podoscope and the navicular drop test (NDT) were used to assess flatfoot alignment. Foot dysfunction was assessed using the Foot Function Index (FFI). Data was analyzed using SPSS version 25.0 (Ethical approval number: 280).

Results:
The prevalence of flatfoot was 66.9% and 61.1% based on NDT and podoscope assessment, respectively. No significant factors were associated with flatfoot. Participants with bilateral flatfoot had higher FFI scores compared with participants with no flatfoot.

Conclusion:
More than two-thirds of the participants had a prevalent flatfoot with no significant factors possibly identified. Poor posture was significantly associated with gender, body mass index and other joint deformities. Bilateral flatfoot was associated with foot pain and dysfunction. Further study is warranted to gain perspective on the causes of flatfoot deformity.

Keywords: Flatfoot, Foot Dysfunction, Prevalence, Physical Therapy, Posture

Poster

PT-05

Heart Rate Count and Gender Differences Using Fox Equation in Healthy Young Adults

Dalal AlRashed, Raghad AlShammari, Nora AlAjmi, Aisha AlDahash, Sara AlAjmi, Shurouq AlSuwaileh. Supervisor: Dr. Maath AHaddad
Physical Therapy Department, Faculty of Allied Health Sciences, Kuwait University

Introduction:
Maximal Heart Rate (MHR) and Optimal Heart Rate (OptHR) for a particular exercise intensity can be determined using Heart Rate (HR) measurements. Recent studies have found gender differences in the Fox formula's applicability. Furthermore, there is a strong correlation between exercise and Heart Rate Recovery (HRR), a predictor of overall mortality.

Methods:
A cross-sectional study was performed at the Health Science Center (HSC), Kuwait University, involving 100 students (50 males, 50 females) aged 18 to 25 years. The Institutional Review Board (IRB) assented to this study with Ref# 639. Demographic characteristics, including age, gender, and Body Mass Index (BMI), were collected. Two exercise sessions were performed at 75% and 80% of OptHR using a stationary bike, maintaining the same intensity for five minutes. HR was measured at rest for Resting Heart Rate (RHR), during, and post-exercise using a pulse oximeter. Post-exercise measurements were taken at 10 and 30 seconds, followed by intervals of 30 seconds until reaching RHR. Statistical Software for Social Sciences (SPSS) v28 was used for statistical analysis.

Results:
The Male (n=50) and female (n=50) groups were matched for age and BMI. The average number of steps for females was 104 steps greater than for males. Males had two beats lower in RHR than females (84 and 86 bpm, respectively). When exercising at 75% OptHR, males took 0.9sec less in recovery time (8sec) than females (8.9sec), $p > 0.05$. Although it is insignificant, the difference in recovery time between the groups was greater (1.2sec) when exercising at 80% of OptHR, $p > 0.05$. In both genders, the maximum drop of HR was shown at 30 seconds of recovery time at different intensities.

Conclusion:
Up to the researchers' knowledge, this is the first study evaluating exercise intensity and gender differences based on HRR in healthy college students. The study showed that genders need to be re-evaluated as it might overestimate or underestimate the actual OptHR for females and males, respectively. Further studies with larger sample sizes are justified to provide more accurate statistical analyses of the results.

Keywords: Optimal Heart Rate, Heart Rate Recovery, Exercise Intensity

Poster

PT-06

What is the existing knowledge of the optimal pressure levels and time required to yield the ideal outcomes for quadriceps muscle post ACL reconstruction using BFR? : A Scoping Review.

Abdullah Shawakan, SPT; Eiman Al-Jadi, SPT; Fatmah Al-kandari, SPT; Fatemah Al-Ramzi, SPT; Jumana Bahzadi, SPT; Mnai Al-Faresi, SPT; Rawan Al-Shammari, SPT; Hesham N. Alrowayeh, PT, PhD Physical Therapy Department, Faculty of Allied Health Sciences, Kuwait University

INTRODUCTION

The Anterior Cruciate Ligament (ACL) is one of the most injured anatomical structures in the knee, affecting the Quadriceps muscle. Rehabilitation and physical therapy programs are crucial. For that, a new effective method called Blood Flow Restriction (BFR) has been proven as an effective method for muscle strength and thickness without using high-load exercises. There are several parameters that need to be considered during BFR application.

METHODS

The scoping review followed the Arskey and O'Malley framework and PRISMA-ScR guidelines to identify the existing knowledge of the optimal pressure levels and time required to yield the ideal outcomes for quadriceps muscle post ACL reconstruction using BFR. Relevant studies were searched in electronic databases PubMed, web of science, and Scopus. The search was carried out using key words across all the databases. Articles were selected based on inclusion and exclusion criteria.

RESULTS

Based on the studies we mentioned, Luke Hughes et al. (2019) found a significant decrease in knee extensors peak torque in the HL-RT group, while no significant changes were observed in the BFR-RT group. Michael T. Curran et al. (2020) did not find significant differences between groups in terms of maximal isokinetic/isometric knee extension or rectus femoris volume. Erik Iversen et al. (2016) found no significant difference in quadriceps muscle atrophy or loss of quadriceps ACSA between the occlusion and control groups. Dylan P. Roman et al. (2023) showed that the BFRT group had significantly higher isometric knee extension torque compared to the control group, but size and volume were not assessed. Xuefeng Li et al. (2023) found significant differences in the sum of thickness of the rectus femoris and intermediate femoris between the control group, 40% AOP, and 80% AOP groups. These studies provided insights into the effects of different interventions on various parameters.

CONCLUSION

The greatest improvement in quadriceps muscle strength and volume in post ACLR rehabilitation was using 80% AOP with low load exercises for 60min, 2 times/ week.

KEYWORDS: Anterior Cruciate ligament reconstruction, blood flow restriction, Athletes, Quadriceps.

Poster

PT-07

Balance dysfunction and risk of falling among young adults with migraine

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Physical therapy department, faculty of allied health sciences, Kuwait University.

INTRODUCTION:
Migraine is a neurological condition characterized by recurrent severe headache that affects one side of the brain in a throbbing manner. Individual with migraines will suffer from moderate to severe headaches and gastrointestinal problems. Additionally, migraines can result in physical and functional impairments interfering with a person's daily activities. Researchers have been separately exploring the connection between migraine, balance dysfunction, and neck stiffness. However, the relationship between these factors together is not well established yet. Additionally, minimal attention given to young adults

OBJECTIVES:
Our study is designed to investigate the correlation between migraine, balance dysfunction, and neck stiffness among young adults in Kuwait.

METHODS:
Two groups (migraine group n=25) and (non-migraine group n=25) of both genders who their age range between 21-35 years old and fulfilled the eligibility criteria was included. The participants will be interviewed using The History of Falls Questionnaire, and NPAD. Following, the cervical mobility will be assessed by cervical ROM and TWT. Finally, the balance function will be assessed for all participants using mini-BEST and the Balance Master using modified SOT and LOS protocols.

RESULTS:
Results show significant difference between both groups in almost all cervical and balance measurements. These are all cervical ROM, TWT, NPDs, modified SOT, LOS (MXE), and mini-BEST.

The only significant correlation between the cervical and balance measurements within the migraine group was between cervical extension ROM and mini-BEST (p-value is 0.047) with correlation coefficient 0.40. However, there are few variables which are not far from significance level (P-value <0.150,). These are TWT vs. modified SOT, NDPs vs. modified SOT, TWT vs. LOS (DC), NPDs vs. LOS (MXE) (P-values < .150) and correlation magnitude that exceed 0.3 with negative relation.

CONCLUSION:
Individuals with migraine have pain, stiffness, and limited cervical spine mobility, as well as forward flexed posture. Furthermore, they showed postural instability and limited ability to reach for a target in different directions. The results propose that the more they suffer from reduction in the cervical spine mobility the more they are prone for balance dysfunction and high risk of falling.

KEYWORDS:
migraine, risk of falling, balance, neck stiffness.

Poster

PT-08

The Effect of Hip Injuries on Balance Performance in Athletes

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[1]Physical Therapy Department, Faculty of Allied Health Sciences, Kuwait University, Kuwait.

INTRODUCTION
Athletes commonly suffer hip injuries that limit their performance. While past studies explored injury rates, the impact on balance remains unclear. The aim of the study is to examine the impact of hip injuries on balance performance of young athletes participating in ball games in Kuwait.

METHODS
A cross-sectional descriptive study was conducted on 50 athletes (40 male and 10 female) aged 18-35 from various Kuwaiti sports clubs. The Star Excursion Balance Test is a simple and reliable screening tool for deficits in dynamic postural control and it was used to compare balance performance in athletes with (n=25) and without hip injuries (n=25). Independent Samples T-Test and Mann-Whitney U Test were used to check for any significant differences between the two groups. ANCOVA was used to control for covariates. This project was approved by the HSC Ethics Committee for Student Research, project no. 32.

RESULTS
On average, the non-injured group was older, taller, with longer leg length and more years of practice. Both groups had 80% male participants, similar BMI (mean=22kg/m^2), and similar lower limb muscle strength. The two groups were significantly different in 5 out of 16 directions of the balance test ($p<.05$). The non-injured group had better scores as compared to the injured group in the right posterior-medial, left posterior, left lateral, left posterior-lateral, and left posterior-medial directions.

CONCLUSION
This study showed that injured athletes performed significantly worse in some directions compared to non-injured athletes, supporting the hypothesis that hip injuries have a negative impact on balance. It's important to acknowledge that our sample size was small, we only relied on one outcome measure for balance, and we didn't rule out the effect of fatigue. Additionally, most sports clubs lacked physical therapists, highlighting the need for their involvement in developing balanced training programs for athletes.

KEYWORDS:
Athlete, Balance, Hip injury, Star excursion balance test

Poster

PT-09

Attitude of Physical Therapy and Occupational Therapy students towards working with children with disability

Taibah Al-khanfar[1], zainab darweesh[2], Aliyah Al-awabthani[3], Fajer Al-ajmi[4] , Manar Al-ajmi[5] , Ghadeer Al-dashti[6] , Msaab Al-omair[7] , supervised by: Mrs. Aminah Sadeq
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INTRODUCTION

Pediatric rehabilitation (PR) is a treatment of babies, children, and young people with disabilities from birth to 19 years. Both pediatric physiotherapy (PPT) and pediatric occupational therapy (POT) are integral parts of (PR), that help kids with acquired or congenital disabilities to meet their highest physical, mental, social, occupational and educational potential.PPT and POT may face several challenges and barriers in treating children with disabilities.These challenges and barriers impact PT/OT student attitude towards working with children with disabilities. Based on our knowledge, no studies have been done in the Middle East area to investigate these attitudes as of this date.

METHODS

A cross-sectional survey design was adopted, wherean online questionnaire used to collect data from 308 PT and 156 OT students enrolled in second, third, and fourth years inthe AHS-Kuwait University. The online questionnaire consistsof two main parts: the demographic data and the Attitude Toward Persons with Disabilities Scale (ATPD-A).SPSS v.27, median and interquartile range (IQR) were used to analyse the data.

RESULTS

The results revealed

- majority of the students have positive attitude toward working with children with disabilities (n=208, 53.7%).
- significant differences between the PT and OT students' attitude, and within each majors $P < 0.001$.

CONCLUSION

The study found that positive attitudes toward working with children with disabilities was predominated among PT and OT students enrolled in AHS, as measured by the ATDP-A scale. Demographic Factors did not significantly influence the participated students attitudes, but having family members with disabilities and taking pediatric courses significantly influenced occupational therapy (OT) students' attitudes.These results are specific to the participated PT and OT students. The findings call for further research through mixed method design to compare attitudes between student and trainee PT/OT.

KEYWORDS:
Paediatric rehabilitation1, physical therapy2, children with disabilities3

Poster

PT-10

Psychometric Properties and Validation of the Arabic Version of the Stroke-Specific Quality of Life Questionnaire

Alaa Soliman; SPT, Ashwaq Alrashedi; SPT, Asmaa Alhajri; SPT, Sara Alharbi; SPT, Sara Alsalem; SPT, and Shouq Aldhafeeri; SPT
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INTRODUCTION
Stroke causes considerable permanent disabilities annually. Rehabilitation after stroke is crucial for improving functional activities and quality of life (QOL). The stroke-specific quality of life scale (SS-QOL) is a stroke-specific, patient-centred outcome measure intended to provide an assessment of health-related QOL. It is composed of 49 items in 12 domains: Mobility, Energy, Upper Extremity Function, Work/Productivity, Mood, Self-Care, Social Roles, Family Roles, Vision, Language, Thinking, and Personality. Aim: To investigate the psychometric properties (reliability and validity) of the Arabic version of the SS-QOL in a cohort of Arabic speaking patients presenting with stroke.

METHODS
Participants were 21 with subacute and chronic stroke, who completed the Arabic SS-QOL at the baseline. All enrolled subjects were assessed over two visits on two different days. In the first visit, the participants completed the demographic data forms, Arabic version of SS-QOL, Short Form Survey (SF-36), and Stroke Impact Scale (SIS-16). In the second visit, the participants completed the Arabic SS-QOL and the testing therapists scored the performance of the subjects on the simplified Stroke Rehabilitation Assessment of Movement (sSTREAM).

RESULTS
The Arabic version of SS-QOL has excellent internal consistency with Cronbach's Alpha of was 0. 981. Test-retest reliability was excellent with an ICC of 0.903. The SEM was 11.318 and the MDC_{95} was 9.325. The total scores of SS-QOL Arabic version did not show ceiling or floor effects, which demonstrate its content validity. Construct validity of the Arabic version of SS-QOL domains with SF-36 ranged from ($r= 0.144$ to 0.765, $p<0.01$); with SIS ranged from ($r= -0.012$ to 0.84, $p<0.01$); and with sSTREAM ranged from ($r =0.333$ to 0.893, $p<0.01$).
CONCLUSION
The SS-QOL Arabic is a reliable and valid measure for assessing stroke patients' quality of life.

KEYWORDS:
Stroke, SS-QOL, Kuwait

Poster

PT-11

The Impact of Education on the level of Physical Activity among Pregnant Women in Kuwait

Aljazi A. Alshammari[1], Danah F. Aldaihani[1], Fatemah M. Alshammari[1], Nouf M. Alsaidi[1], Nour H. Alshammari[1], Rahaf H. Alshammari[1], Mrs. Fareedah Almohri[1]
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INTRODUCTION

Pregnancy is an important life stage for a woman, wherein many physiological and psychological changes within her body occur, which can affect her level of physical activity (PA). According to WHO, moderate PA during pregnancy can play a preventive role against complications and has a positive effect on the overall health of the mother and her fetus. According to studies, most of the women are not reaching an adequate level of gestational PA. The reason behind this problem may be lack of sufficient information and knowledge, as well as fear of complications. The main objective of the study is to explore the impact of education on the level of physical activity during pregnancy in Kuwait.

METHODS

This research was done using a quasi-experimental pre-post intervention design, with 20 pregnant women in Kuwait over 18 years old. After obtaining ethical approval and signing the consent form, all participants filled out the Pregnancy Physical Activity Questionnaire (PPAQ) and were then joined in a WhatsApp group where a trained pre-natal trainer presented online educational sessions for 3 weeks. The second filling of the questionnaire was done by the participants after completing the program.

RESULTS

The results of this study showed that the total score of the PPAQ was higher in the post-intervention attempt compared to the pre-intervention score. Individually, questions were clustered into groups according to the type as well as the intensity. Results showed that the moderate intensity activities, as well as sport and exercise activities, had a significant change in the score before and after intervention. Sedentary activities showed the least change, followed by light activities.

CONCLUSION

Education and training can play an important role in motivating pregnant women and enhancing the level of physical activity in their daily life.

KEYWORDS: Kuwait, Pregnancy, Physical activity, Education.

Poster

PT-12

Health Status and Quality of Life of Adults with Cerebral Palsy in Arabic-Speaking Countries: Scoping Review

Ali Attallah, SPT; Amjad Alsalaim, SPT; Anisa Almlifi, SPT; Mariam Alshams,SPT; Munira Almutairi, SPT; Shaikah Almutairi, SPT; Wasan Alfadhli, SPT;
Mentor: Anwar Almutairi, PT, PhD
Physical Therapy Department, Faculty of Allied Health Sciences, Kuwait University

Introduction
Cerebral palsy (CP) is the most common motor physical disability, with an incidence rate between 2 to 2.5 per 1000 births. CP is a group of disorders that affect the development of movement and posture that first manifest in early childhood. Therefore, the aim of the study is to examine the existing knowledge on the health status, quality of life, pain, physical performance, sleep quality and fatigue of adults with CP in Arabic – speaking countries.

Method
After defining the question, four databases were searched to extract relevant studies. Inclusion criteria were: 1) studies conducted on adults with CP (i.e. >18 years), 2) studies that included as least one outcome related to health status, motor abilities, pain, fatigue, Quality of life, or sleep quality, and 3) studies that were done in Arabic-speaking country. Studies were excluded if they were epidemiological studies, or done on older adults (i.e. > 65 years of age). Screening process were done by 3 independent reviewers. Data charting of the selected studies was done by 3 independent reviewers. Study Quality Assessment Tool (SQAT) was used to evaluate the selected studies.

Results
Databases search produced 141 potential studies (PubMed = 80, SCOUPS = 30, WoS = 1, EMBASE = 20). Finally, 3 studies were included in this scoping review. All studies were cross-sectional and were conducted in Iraq, Jordan, and Saudi Arabia. The studies explore physical activities, self-esteem and comorbidities in individuals with CP. Two of the included studies scored as fair on SQAT and the third scored as good.

Conclusion
The existing knowledge on the health status, physical performance, quality of life, quality of sleep, and fatigue in adult with CP in Arabic-speaking countries were represented by the 3 identifies studies. This highlights the limited research on adults with CP across this region. The findings emphasized the need for more comprehensive research to address challenges faced by adults with CP in Arabic-speaking countries, which would contribute to understanding and improving outcomes for them.

Keywords: Cerebral Palsy, Adults, Quality of Life, Physical Abilities.

Poster

PT-13

Impact of lack of sleep and stress on exam performance in HSC

Fatemah Al-Tamimi[1], Reem Al-Harshany[2], Nouf Mahmood[3], Manar Al-Azmi[4], Eman Abdulah[5], Hussain Shareif[6], Hamad Haidar[7] – Mentor: Dr Meqdad Taaqi
Department of Physical Therapy, Faculty of Allied Health Sciences, Kuwait University, Kuwait.

INTRODUCTION:
Sleep has a major role in our lives, and adequate sleep hours are needed for a student with a busy schedule of theoretical and practical work. Stress affects some students and may lead to low academic performance. Moreover, less sleep may cause stress for students during exams. In this study, we will explain and give a clear idea about sleep, stress, and how they affect students' performance during exams in HSC.

METHODS:
A sample of 400 HSC students in Kuwait will be asked to participate in a quantitative cross-sectional study. The study will use two questionnaires, which are the Sleep Quality Index (PSQI) for sleep and the Perceived Stress Scale (PSS) for stress, and they will be sent as a survey via email and social media. The study procedure will be explained to each student before they sign the consent form, and detailed demographic information will be obtained.

RESULTS:
400 participants were recruited from HSCs and from different academic levels. Results show that GPA is significantly associated with stress and sleep quality. For stress (PSS), it can be seen that those with low stress are more likely to have a GPA > 3 as compared to those with moderate or high stress (77.8% as compared to 41-49%, respectively). For sleep quality (PSQI), it can be seen that those with good sleep quality are more likely to have a GPA > 3 as compared to those with worse sleep quality (75% as compared to 33-50%, respectively).

CONCLUSION:
The research shows that students who experience a lack of sleep and increasing levels of stress have a decrease in their performance in college and on tests in HSC. In order to help students manage stress and perform better, we advise students and faculty members to practice stress-relieving and better sleep activities.

KEYWORDS:
Sleep, Stress, Performance, PSQI, PSS.

Poster

Radiologic Sciences (RS)

RS Awards

Diagnostic Radiology

	No.	Name	Title	Poster
1	RS-07	Fadel Jamal, Shoug AlShammari, Dana Alazemi, Taif Alajmi	Effectiveness of Gonad shielding in Radiography	View
2	RS-06	Taibah Al-Bader, Noura Alenezi, Raghad Alotaibi, Dema Al-Ajmi	Radiographers' burnout and its impact on their productivity	View

Nuclear Medicine

	No.	Name	Title	Poster
1	NM-03	Dana Al-Dalmani, Rafa Al-Shahab, Thekrayat Al-Hadab	Validation of the measurement of Coronary Artery Calcium Score in MPI SPECT/CT and its assessment in patients with normal MPI	View

RS-01

Repeat rate in Diagnostic Radiography: Can AI help?

Bodour Alrashidi, Hadeel Almatrafi, Jenan Haidar, Mariam Alrashidi, and Dr. Ghadeer Albaloul
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INTRODUCTION

Despite the massive advances in medical imaging technology, there remains the issue of repeated radiographic procedures due to human error, equipment malfunction, patient motion, or image artifacts. Artificial intelligence is a machine learning algorithm that predicts outcomes based on previous data. Artificial intelligence is a developing technology that is being gradually introduced into the medical field with the aim of improving efficiency, accuracy, productivity and much more. This study has evaluated the perception of radiographers about the introduction of artificial intelligence in the department and the effects of AI on the profession in terms of efficiency and error reduction.

METHODS

This study was conducted through a questionnaire using Google Forms and sent via electronic communications to MOH radiographers only. The questionnaire was distributed to ministry of health hospitals: Al Adan, Al Amiri, Al Jahra, Sheikh Jaber Al Ahmed, Al Farwaniya, and Mubarak Al Kabeer. It consists of 18 questions that can be filled out in 5 to 15 minutes. The number of participants was 113 which was collected over 4 weeks period and then analysed using Microsoft Excel

RESULTS

The results showed that 81% of participants believe inclusion of AI will be helpful. Additionally, 73.45% of radiographers believe that AI can assist them in reducing repeats. The participants indicated enough awareness about AI as 58% believed that AI has both positive and negative effects.

CONCLUSION

This study has found that radiographers look forward to the benefits of AI inclusion in their practice although some of the participants showed concerns regarding data privacy.

KEYWORDS:
Artificial intelligence, AI, Radiography, Radiology, Repeat rate.

Poster

RS-02

Effect of kVp Manipulation on Image Quality Parameters and Patient Dose in Computed Tomography - Cardiac Imaging

Zahrah Sulaiman , Fajer Almutairi, Eman AlZoubi , Hadeel Almajdi and Raed Al-saeed
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Introduction:
Since the introduction of Computed Tomography (CT) its clinical applications have been widely spread and increased. This increase in the number of studies increases the collective radiation dose as CT produces more radiation dose to the patient than produced by other imaging modalities. Nowadays the dose is adding up even more as rapid multiphase contrast enhanced studies and screening studies are performed. This increased number of CT cardiac examinations urged the concern on patient dose and the risks it may induce. However, reducing the radiation dose affects the image quality produced, which may interfere with image interpretation and lead to false diagnosis. Therefore, the image quality and radiation dose should be balanced to produce the optimum diagnostic image quality with the lowest radiation dose possible.

Aim*:*
This study will assess the possibility to reduce the amount of radiation dose to the patient undergoing cardiac CT imaging via manipulating tube potential (kVp) parameter without degrading the level of image quality.

Method*:*
The study was conducted using Siemens CT scanner in Adan Hospital. 5 scanning protocols were set with variable kVp values ranging from 70 to 140 kVp while the other parameters including mAs were held constant. The protocols were used to image a CT quality assurance phantom whereby image contrast, noise and spatial resolution (SR) were assessed. Using ImageJ program, the standard deviation was collected for the noise and spatial resolution. The data was analyzed by EXCEL program using T-test program.

Results*:*
A reduction of radiation dose of almost 30-50% was achieved by reducing the kVp parameters to certain values, while maintaining acceptable degree of image quality.

Keywords:
cardiac CT, kVp, radiation dose, image quality

Poster

RS-03

Radiation Dose in Fluoroscopy for the patient depending on the location of the X-ray tube

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INTRODUCTION

Fluoroscopy has been widely used for both diagnostic and therapeutic purposes in the radiology department. It can image the internal organs using continuous imaging that shows the insertion of a catheter to the desired anatomy. But with that, the patient will be exposed to high doses of radiation during the procedure. The operator has to have full knowledge of how the equipment is used and how to protect the patient and the staff surrounding him. In order to achieve that, he has to know the principles of radiation protection guidelines against the risks associated with radiation exposure set by the International Commission on Radiological Protection (ICRP). The main goal for radiation protection is As Low As Reasonably Achievable (ALARA). There are two different locations for the X-ray tube. One is over-couch, which means that the X-ray tube is located above the fluoroscopic table. The other is under-couch, which means that the X-ray tube is located under the fluoroscopic table. The radiation dose will increase when the operator chooses more frames to be taken in 1 second. For example, 3 frames per 2 seconds means taking 6 images while exposing the patient to radiation for 2 seconds. This study aims to determine which X-ray tube location regarding the dose and which locations are safer for the patient.

METHODS

Data was collected from the PACS system of various Hospitals in Kuwait with different fluoroscopic X-ray tube locations were collected and analyzed with Microsoft Excel.

RESULTS

The cases were chosen by the type of procedure, gender, age, duration of the procedure, exposure factors that were used, total exposure for the anatomy, and the location of the tube. Patients were found to be 17 female patients and 17 male patients.

CONCLUSION

There are no statistically significant differences in terms of fluoroscopic exposure time or radiation dose when comparing the location of the fluoroscopic X-ray tubes.

KEYWORDS:
Fluoroscopy, Radiation exposure, Angiography

Poster

RS-04

Evaluation of Pediatric Radiation Dose During Chest X-ray (CXR) and Chest Computed Tomography (CT)

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INTRODUCTION: Ionizing radiation imaging modalities such as X-ray and CT (computed tomography) are necessary to assess pediatrics to diagnose trauma cases, congenital anomalies, pediatrics undergo surgery. Chest radiography (CXR) is one of the most important diagnostic examinations for pediatric. It is a critical diagnostic tool for common diseases and life threating.However, pediatrics are more sensitive to radiation than adults because of their smaller bodies, higher tissue radiosensitivity, and longer life expectancy. This explains why children have a higher risk of developing radiation- induced malignancies and other genetic changes. This emphasize the importance of keeping their radiation dose As Low As Reasonably Achievable (ALARA). The aim is to measure the pediatrics effective dose for CXR and CT. This will assess if the radiation doses are kept within the standard limits.

METHODS: 28 ESD (entrance skin dose) measurements in CXR were performed by using TLD (thermoluminescent dosimeter) chips. In CT procedures, 10 data for pediatric chest CT were taken. Patients age ranged from 2 months to 10 years old, and those were attending their appointments in public hospitals (Mubarak Alkabeer, Alamiri, Al-Sabah, and Ibn-sina hospitals).

RESULTS : The minimum and maximum ESDs for CXRs from all hospital are: 0.38 mGy and 0.68 mGy respectively. The CTDIvol for chest CT scan taken from Ibn Sina hospital is =(minimum = 2.13mGy, maximum= 5.47mGy). The highest ESD average taken from all the hospitals didn't exceed 0.68 mGy. The data were below the standard limits shown in Jimma University Specialized Hospital (JUSH) were ESD = 1.82mGy, and matches the data in Nigeria where the ESD = 0.642 mGy (3). While in CT, the CTDIvol data followed these standard data for chest examinations; from 3 to 23 mGy (CTDIvol).

CONCLUSION : These results reveal a large difference in radiation dose of CT compared to general radiography. In conclusion, while both CT and general radiography are valuable imaging modalities for pediatric chest imaging, they differ significantly in terms of radiation dose.

KEYWORDS:
Entrance skin dose, Computed Tomography, Chest X-ray

Poster

RS-05

Obstructive Sleep Apnea And Alzheimer: A Review Of Linkage and Past MRI and PET Research

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Obstructive Sleep Apnea (OSA) and Alzheimer's Disease (AD) are prevalent conditions affecting our aging population. While the causes of OSA are better understood, the mechanisms behind AD remain largely mysterious, making it difficult to develop effective treatments.

OSA is known to cause cognitive impairment, particularly in attention and executive functions. It affects 3-7% of the global population and significantly contributes to common sleep disorders.[1] Recent research suggests that OSA may also play a significant role in the development of AD. OSA is associated with disturbances in sleep patterns, intermittent hypoxia, oxidative stress, and cardiovascular issues, all of which could increase the risk of AD.

Conversely, AD is a long-lasting, neurodegenerative condition and a significant reason for cognitive decline in older people. AD is characterized by the buildup of amyloid plaques and neurofibrillary tangles. Therefore, there is a variable correlation between OSA and older individuals with AD, who are more likely to have OSA than cognitively normal individuals. Moreover, individuals with OSA experience excessive daytime drowsiness decreased cognitive performance, and a higher chance of moderate cognitive impairment, dementia, and AD compared to those without OSA. The dementia population has a similar prevalence trend, with estimations of OSA rates ranging from 41% to 91% in AD.[2]

Early Alzheimer's disease (AD) diagnosis is crucial yet lacks effective therapies. MRI, a noninvasive imaging tool, aids in AD and obstructive sleep apnea (OSA) diagnosis and treatment planning. Advanced MRI techniques like DWI and fMRI provide detailed brain structure and function assessment in AD and OSA. Combined with CT, MRI enhances airway evaluation in OSA. PET scans complement MRI by revealing metabolic alterations in AD and OSA.

Integration of PET with MRI in PET/MRI hybrid imaging offers a comprehensive approach for AD and OSA assessment, potentially advancing diagnosis and therapy.

This connection highlights OSA as a potential target for preventing AD. This review will delve into the evidence supporting the impact of these mechanisms on AD risk, as well as the potential influence of AD on OSA expression.

Poster

RS-06

Radiographers' burnout and its impact on their productivity

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INTRODUCTION

Burnout is a term that is used to describe a state of exhaustion and inability to cope with the demands of a job or situation. It encompasses a great feeling of emotional exhaustion, depersonalization, and reduced personal accomplishment. According to recent studies, approximately 57.4% of healthcare professionals have reported experiencing at least one burnout symptom. The high levels of burnout among healthcare professionals, including radiographers, have significant implications for patient care quality and safety. Research has demonstrated that burnout is associated with decreased productivity, reduced professional effort, and increased turnover among healthcare professionals which lead not only to workforce shortages but also to escalating healthcare costs and compromises continuity of care for patients. The **aim** of this study is to measure the level of the burnout among radiographers in large government hospitals in Kuwait and its impact on the productivity.

METHODS

The study was formulated based on a specially designed questionnaire that was distributed online to seven major government hospitals in Kuwait using Microsoft Forms program for an 8-week data collection period. The questionnaire consisted of 30 multiple-choice questions that will evaluate the radiographer's workload, emotional factors, psychological factors, workplace culture, relationships, coping mechanisms, self-care mechanisms, burnout symptoms, and support mechanisms. The research sample was consisted of 85 radiographers.

RESULTS

The results show that of the participants, 53 (62%) were female and 32 (38%) were male where 72% of radiographers reported feeling emotionally drained by the end of their workday. While, 68% experienced feelings of exhaustion or fatigue, and 58% experienced symptoms of anxiety or depression. Additionally, many 66% reported physical symptoms such as insomnia or headaches related to their work. It shows that 45% saw a decline in the quality of their work and attention to details, while only 32% felt detached from their work.

CONCLUSION

Burnout affects radiographers of all ages and genders, especially those with long hours and demanding schedules. And by Creating a supportive work environment and offering breaks we can improve the well-being of radiographers and the care they provide to patients, benefiting everyone involved.

KEYWORDS:
Burnout, Productivity, Radiographers

Poster

RS-07

Effectiveness of Gonad shielding in Radiography

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Objective:
Gonadal shielding (GS) is used to protect patients' gonads during X-ray examinations of the abdomen and/or pelvis. Recently, many international radiological organizations have recommended its discontinuation due to lower radiation doses used by digital radiography systems and the high risk of GS misplacement resulting in increased repeat examinations. This study investigated the extent of radiation dose reduction by GS and how correctly the radiographers placed it during imaging procedures.

Methods:
Randomly selected radiographic images of the abdomen and/or pelvis, from the Picture Archiving and Communications System, in one hospital were reviewed. Accuracy of the GS placement and overall image quality were assessed using a visual grading system from 1 to 5. A tissue equivalent anatomical phantom having abdomen and pelvic regions was used with a RaySafe dosimetry system for gonadal dose measurements at 80 kVp & 16 mAs and 92 kV & 8 mAs with and without GS in the gonadal area(s). Statistical analysis done using t-test in Microsoft Excel software with significance at $p < 0.05$.

Results:
The study included 72 patients - 59 males and 13 females. The GS was used on 59% of the males and 30% of the female patients. When it was used, it was properly placed only in 49% of the cases. The average score for proper GS placement for males and females was (2.4 ± 1.0) and (2.9 ± 0.6) respectively, significantly lower than 3 ($p<0.001$). The overall image quality scores were (2.7 ± 1.1) for males and (2.9 ± 0.8) for females. Radiation dose to male and female gonads were 23 mGy and 1130 mGy respectively without GS.

Discussion & Conclusion:
The gonadal radiation dose values are well below the threshold for radiation induced sterility of 250 mGy and 2500 mGy respectively. The increased risk from repeat examination due to GS misplacement and repeated exposure of other organs in the body is more than the benefits of dose reduction using GS. The study agrees with recommendations from international radiological organizations not to use GS in radiographic examinations. Further studies on Computed Tomography imaging needs to be carried out.

Keywords: Gonadal shielding, Radiation dose, Image quality.

Poster

RS-08

Patient Dose Management in Digital Radiography

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Background:
Digital technologies in radiology can reduce patient doses but also increase them, impacting hundreds of millions of patients. Inadequate training and lack of established methods to monitor patient doses can worsen the problem.

Aim:
to assess radiographers' usage and beliefs about gonad contact shielding in digital radiography (DR). The 2nd approach aims to determine the Dose Area Product (DAP) and correlate with the DRL to optimize the patient dose by remoting the quality control program and the technical factors applied.

Method:
The study has two approaches: An online questionnaire that distributed to radiography educators to assess their opinions regarding the use of gonad shielding. The second approach is a retrospective study to determine the DAP values on digital images for common examinations in radiography. The DAP values for National DRL for Digital General Radiography in Kuwait (mGy.cm2) will be compared.

Results:
57/86 participants, predominantly female (82.5% female and 17.5% male). Demographics, Guidance, education and training, Use of GCS in DR, and opinion on the use of GCS in DR data were collected and analyzed. 100 images were retrieved, the raw and mean values of the DAP readings for the four major hospitals tabulated and compared with the DRL.

Conclusion:
No consensus found in literature or radiography educators' opinions concerning the use of GCS. So, appropriate shielding of the gonads during radiographic examinations should be encouraged. Retrospective log files can be adopted for dose monitoring in routine clinical work, to optimize the patient dose by remoting the quality control program and technical factors.

Poster

RS-09

Transforming Medical Imaging: The Impact of Artificial Intelligence on Radiology

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INTRODUCTION:
There is a growing adoption of Artificial Intelligence (AI) in the field of medical imaging. AI has the potential to enhance patient care, improve workflow, and the analysis of patient's medical data. This study aimed to highlight the available applications of AI by evaluating an AI auto-alignment software for MRI scans and evaluate an AI-based software that generate chest reports. Moreover, this study aimed to assess radiographers' knowledge, perceptions, and expectations toward integrating AI into medical imaging.

METHODS:
This study had three parts: In the prospective part, participants underwent brain MRI using standard and AI-aided scans, the time was recorded for each sequence for 4 participants with 2 different operators for comparison. In the retrospective part, chest radiographs were collected (n=40), and AI report was generated using Siemens AI software. A Likert scale was used by radiologist to rate the report. In the last part, survey was distributed to radiographers (n=50) requesting information regarding demographics and knowledge of AI. Ethical approval was obtained (project number 19). Data are presented as mean ± SD values.

RESULTS:
The survey results showed that most participants agreed that radiographers must adapt the AI technology and they showed interest in taking courses about AI within radiography (98%, 92%, n=50). Participants' opinions on AI correlated with their perceptions of AI education ($p<0.05$, $r=0.307$). The finding showed that the radiologist agreed with 53% of the AI-generated chest reports. The average time needed using manual MRI alignment was 25.6±4.8 sec and 12.9±5.4 with automatic positioning and, 1 sec with AI.

CONCLUSION:
The findings identified a need for AI education and training for radiographers to increase their knowledge and improve the ability to use AI. Additionally, the study demonstrated that AI powered tools are indicating a great promise in the field of medical imaging.

Keywords:
Artificial Intelligence, Medical Imaging, Radiology

Poster

RS-10

Diversity and inclusion in radiology: a challenge to be faced.

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INTRODUCTION

In any workplace, it is crucial to cultivate an environment that values cultural balance and inclusivity, especially when dealing with a diverse group of individuals from various backgrounds and cultures. Unfortunately, the field of medicine, particularly radiology, faces a significant under-representation of minorities across education, workforce, and leadership positions. This inequality becomes more pronounced as minorities go to higher ranks or higher job titles. Biases, generational attitudes, and discriminatory workplace cultures contribute to this issue. Minorities often face a lot of obstacles in their career progression due to these factors. Purpose The study seeks to identify proactive measures and policies that can promote cultural diversity and inclusion, aiming to create a workplace environment free of discrimination or harassment. The aim this research aims to explore the significance of creating a positive cultural environment that embraces various beliefs and practices. By doing so, potential conflicts among employees from diverse backgrounds can be addressed effectively.

METHODS

A questionnaire was distributed to eight different clinical centres in Kuwait and was solved by radiographers.

RESULTS

The data was collected over 3 weeks, 104 responses were received, 50.96% of non-Kuwaiti believes that a diversity concern is not being taken seriously by supervisors, 17.31% of Kuwaiti radiographers believe that cultural identity does not play a negative role in career progression 24.04% of non-Kuwaiti radiographers indicate the opposite, implying that these radiographers perceive cultural identity as a barrier to career advancement.

CONCLUSION

Overall multicultural communication in the radiology department is proficient. Conversely limitations and absence of certain guidelines can lead to cultural impediments.

KEYWORDS:
Cultural diversity, inclusion, belonging.

Poster

RS-11

The Effect of Using High kVp on Image Quality in Digital Mammography

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Abstract:

Background:

The use of digital and 3D mammography for detection of abnormalities in breast tissue. Factors affecting image quality include detector technology, noise, and scattering radiation. The kVp setting is crucial for determining x-ray energy level and image quality. It also affects contrast-to-noise ratio (CNR) for better breast tissue visualization. Optimal kVp balance is crucial for optimum image quality and minimal patient radiation dose.

Aim:

The aim of this study was to investigate the effects of increasing kVp values on image quality and patient dose with the use of Molybdenum target and Rhodium filter (Mo/Rh).

Method:

Full-field digital mammography using Mo/Rh with alpha-Si detector, the size of the detector was 10 x 12 inches and pixels size of (100 µm). ACR phantom was used. Five exposure were repeated with different kVp's 28,32,34,36,and 38.The mAs values were 71, 45, 36, 32 and 28. The five images were evaluated by five senior technologists for demonstrating the visibility of fiber, massess and micro-calcification.

Result:

In this study all the kVp's gave the same scoring value of fiber, massess and micro-calcification. In 28 kVp the visibility of fiber have slightly decreased. The masses are all visible in the five exposures. The scoring values of micro-calcification are all the same, but only four are visible at all five exposures.

Conclusion:

Good image quality in all of the kVp values using (Mo/Rh) which is promising with high kVp.

Poster

RS-12

Renal size assessment by Computed Tomography & Ultrasound Imaging

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INTRODUCTION & PURPOSE:
Renal size assessment is very essential especially in many chronic systemic diseases like in diabetic, hypertensive, hyperlipedemic. Renal size assessment is established using many imaging modalities like ultrasound (US), computed tomography (CT), and magnetic resonance imaging (MRI). This study aims to evaluate the difference between using CT and US in renal size assessment.

METHODS:
In total, 15 patients who underwent CT and US will be accessed using Picture Archiving and communication System (PACS) in Al-Sabah Hospital and will be enrolled in this prospective study. The Radiologic technologist (RT) will measure the renal size using the US and another RT will use CT to measure the bipolar length of each kidney. Both RT will be blinded to each other results. Statistical analysis will be performed to assess the difference between both imaging modality in renal size measurements.

RESULTS:
There were 4 females (27%) and 11 male (73%). Their mean±SD age was 39.93±20.31 years. Their mean±SD body mass index was 24.71±2.42. The mean ± SD of renal length for right and left kidney by CT and US were 10.21±0.74, 10.21±0.74; and 9.95±0.95, 10.04±0.94; respectively. Independent sample t-test showed no significant differences between the renal length measurement by CT and US for the right kidney (P=0.984) and for the left (P=0.799).

CONCLUSIONS:
US is equivalent to CT in assessment of renal size. US is safer, cheaper, and is non-invasive, and can evaluate many more features of kidneys.

KEYWORDS: computed tomography, ultrasound, renal size, renal ultrasound, computed tomography urography

Poster

RS-13

The role of Interventional Angiography in Cerebral Aneurysm Embolization in Kuwait

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INTRODUCTION & PURPOSE:
The most devastating complication of cerebral aneurysm is its rupture and subsequent subarachnoid haemorrahge, stroke, or death. The aim of this study is to assess the successful rate of cerebral aneurysm coil embolization using cerebral interventional angiography in Kuwait patients.

METHODS:
All patients attended the clinical radiology department with evidence of cerebral aneurysm confirmed by computed tomography angiography (CTA) and or magnetic resonance angiography (MRA) from the period December 2022 to December 2023 will be recruited from the Picture Archiving & Communicating System (PACS) of the Radiology department at Ibn-Sina Hospital-Kuwait and will be entered to the study. Statistical analysis of their demographic data will be analysed as well as the successful rate will be calculated.

RESULTS:
There was a total of 77 patients who underwent cerebral angiography for aneurysm coil embolization as confirmed by their MRI. 51 patients (66%) were successful using. There were 28 females (55%) and 23 male (45%). Their mean±SD age was 51.24±10.62 years. Their mean±SD body mass index was 26.54±3.80. 26 out of 77 patients (34%) were failed. There were 8 females (31%) and 18 male (69%). Their mean±SD age was 48.24±7.62 years. Their mean±SD body mass index was 25.54±5.30. The causes of failure were 13 cases with wide aneurysmal neck, 5 cases with fusiform/saccular type of aneurysm, 4 cases with giant/multiple aneurysms, 2 cases far/not proper guidewire, and 2 cases with wide neck and bilevel.

CONCLUSIONS:
Interventional angiography with coil embolization is the only method to shut down the cerebral aneurysm and prevent further complications.

KEYWORDS: cerebral aneurysm, angiography, stroke, cerebral, genetic

Poster

NM-01

The effect of different reconstruction methods on Ejection Fraction, and Blood Flow produced by 82Rb PET images

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Introduction:
One of the major advantages of using 82Rb PET is its ability to quantitatively measure cardiac parameters, including Left Ventricular Ejection Fraction (LVEF) and Myocardial Blood Flow (MBF), in a non-invasive manner 1. However, since its routine clinical use, Rb PET imaging has been limited by high noise levels and relatively poor spatial resolution 2, 4. Various reconstruction methods, including Filtered Back Projection (FBP) and Ordered Subset Expectation Maximization (OSEM), might be applied to reconstruct the images and improve their quality 5, 6. Different reconstruction methods might produce significant differences in the cardiac quantitative parameters including MBF and LVEF% 4.

Research aim:
In this research, our goal is to assess how different types of reconstruction, including FBP and OSEM, can affect quantitative cardiac parameters such as MBF and LVEF%. The statistical differences in MBF and LVEF% values at rest and during stress were measured when using both the OSEM and FBP reconstruction methods.

Methods:
This was a retrospective study in which data were collected from the nuclear medicine department database at the Chest Diseases Hospital (CDH) in Kuwait. Patients who underwent 82Rb PET stress and rest cardiac scans within the last four years were identified. The study included only 50 patients of both genders, ages 30 to 80 years. 82Rb PET Images were reconstructed using both FBP and OSEM reconstruction approaches. Analysis was performed to evaluate the statistical difference in cardiac parameters, including MBF and LVEF% when different reconstruction methods were applied.

Results:
No statistically significant differences were observed in MBF during stress and rest when using OSEM and FBP, with p-values of 0.37 and 0.35, respectively. Similar patterns were noted in the LVEF% values, with no significant difference in their values when using OSEM and FBP, with p-values of 0.61 and 0.47, respectively.

Conclusion:
Applying different reconstruction methods, such as FBP and OSEM, did not produce significant statistical changes in MBF and LVEF% values in images obtained from 82Rb PET stress-rest cardiac scans.

KEYWORDS:
Left Ventricular Ejection Fraction (LVEF), Myocardial Blood Flow (MBF), Filtered Back Projection (FBP)

Poster

NM-02

Advanced Implementation of U-Net Machine Learning Model In Myocardial Perfusion Image Segmentation

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Background:
Myocardial perfusion imaging (MPI) is a type of single photon emission computed tomography (SPECT) imaging that is performed to evaluate patients with suspected or documented coronary artery disease (CAD) that require accurate and precise image processing. To provide accurate diagnosis, processing and segmentation should be done accurately. Many problems may arise from segmentation issues leading to difficulties in diagnosis. Machine learning (ML) algorithms have been developed with superior performance to overcome segmentation problems. This study used ML algorithm called U-Net to provide accurate image segmentation in MPI.

Method:
one thousand one hundred MPI cans were collected from PACS system at Al-Jahra Hospital between the period of 2015 and 2024. To train the U-net model, 150 studies have been segmented by different nuclear medicine (NM) experts to provide ground truth (i.e. gold-standard coordinates). To assess the performance of the model, multiple cross-validation tests (i.e., accuracy, precision, intersection over union (IOU), recall and Dice coefficient) were utilised after breaking down the main dataset into training set (n= 150 scans) and validation set (n= 893 scans).

Result:
The findings indicate that the accuracy stands at 98%, precision at 94%, IOU at 88%, recall at 92%, and the Dice coefficient at 93%. Confusion matrix revealed the following: 3508 true positives (86%), 407 true negatives (10%) totaling to ≈ 97% accuracy.

Conclusion:
The results show that U-Net model reduces the segmentation problems allowing better diagnosis and subsequent accurate reporting.

Poster

NM-03

Validation of the measurement of Coronary Artery Calcium Score in MPI SPECT/CT and its assessment in patients with normal MPI

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Introduction:
A coronary artery calcium score (CACS) is a test used for measuring the amount of calcium that is built up in coronary artery to determine the atherosclerotic disease and future coronary artery disease (CAD). The assessment of CACS is conducted through CT images using either Myocardial Perfusion Imaging Single photon emission computed tomography/computed tomography (MPI SPECT/CT) or Computed Tomography Angiography (CTA).

Aim:
The aim of this study is to validate CACS measurement of MPI SPECT/CT by comparing it with CTA and to investigate the importance of CACS measurement for diagnosing future atherosclerosis and CAD, even in cases where MPI findings are normal.

Methods and Materials:
The study involved retrospective analysis of 20 random patients aged between 30-90 years old who underwent both CTA and MPI SPECT/CT in Adan hospital. CACS from MPI SPECT/CT was measured using Smart Score 4.0 software and the results besides CT radiation doses were compared with CTA. Additionally, CACS of 31 patients with normal MPI findings were measured to assess the usefulness of CACS as a tool for diagnosing future CAD.

Results:
our study indicated that there is a strong positive correlation of the CACS measurements between CTA and MPI SPECT/CT, with the 3 categories method (CACS 0-100, 101-400, >400) showed a slightly stronger Pearson correlation coefficient (r=0.97) compared to direct head-to-head comparison (r=0.81). Additionally, in patients with normal MPI findings, a notable proportion (58.01%) had abnormal CACS values, suggesting varying degrees of future CAD risk.

Conclusion:
our study validates the CACS measurement in MPI SPECT/CT, which can be measured from CT protocol used in MPI SPECT/CT for attenuation correction. Additionally, the study emphasizes the critical role of CACS as an indicator of future CAD risk, supporting its routine use in clinical practice for all MPI patients to improve patients' outcomes.

Poster

NM-04

Physical Factors Affecting Quantitative Thyroid Uptake Measurements Using Tc99m pertechnetate

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Background:
Thyroid scintigraphy and uptake using technetium (Tc) -99m pertechnetate has become a preferred alternative to radioiodine thyroid study due to its superior features. The localization of $^{99m}TcO_4^-$ in the thyroid gland via the same route as radioiodine tracers and traps, but it does not organify. Several physical factors could affect the thyroid uptake measurements using $^{99m}TcO_4^-$.

Aim:
This study aims to evaluate the impact of physical factors that could affect the thyroid uptake measurement using $^{99m}TcO_4^-$.

Methods:
In this study we used a point source of 1mCi of $^{99m}TcO_4^-$ to evaluate the effectiveness of physical factors in the total count rate detected by a gamma camera such as type of collimator, distance, matrix size, and zoom. In addition, the impact of the residual activity in the site of injection had been evaluated.

Results:
In this study we found that there is a significant effect of changing the distance between pinhole collimator and radioactive source in the total count rate but there is no difference of changing the distance while using the parallel hole collimator. The location of the radioactive source in the FOV was tested, and we are found that there was no significant differences in the count rates, which were measured from parallel hole collimator by changing the position of the source, however there is a notable change in the count rate which were measured around the FOV using pinhole collimator having the highest count at the centre FOV. In addition, we found that changing matrix size and zoom have no effect on total counts. Finally, there are no differences between the mean total thyroid uptake measurements, which were normalized the administration dose with the count at the injection site or without taking it in our calculation.

Conclusion:
It is vital to evaluate the physical factors affecting thyroid uptake measurement to standardize thyroid uptake protocol and ensure repeatable and reliable outcomes.

Keywords: Thyroid uptake measurements, physical factors, $^{99m}TcO_4^-$.

Poster

www.hsc.edu.kw/SRD2024/