Keynote speakers

Prof. Gerold Unterhumer
Head of Degree Program Radiological Technology,
FH Campus Wien,
Vienna Virtual online participation.

Biography:

Prof. Gerold Unterhumer completed his training in Radiological Technology in Vienna in 1989 and gained professional experience in X-ray diagnostics, computed tomography, angiography and interventional radiology, radiotherapy and nuclear medicine. He has been a teacher at the Academy since 1995 and a full-time lecturer on the Bachelor's degree programme in Radiological Technology at the University of Applied Sciences (UAS) FH Campus Wien since 2007. In 2008, he developed and implemented the first Austrian master's course in radiology technology, which he led until 2016. Since 2016, he has headed Austria's largest Bachelor's degree programme in Radiological Technology at the University of Applied Sciences FH Campus Wien. He has been a certified teacher of Radiological Technology since 2003 and successfully completed his studies in educational science and sociology at the University of Vienna in 2006. His commitment to international cooperation led to his involvement in the Higher Education Network for Radiography in Europe (HENRE) from 2004, an association of European Universities, which led to the founding of the "Educational Wing" of the European Federation of Radiographer Societies (EFRS) in 2008. At national level, he has been involved in various working groups and official committees for vocational training development and a national curriculum since 1992. The Austrian Ministry of Health has appointed him as an expert assessor for training and education in Radiological Technology in recognition procedures since 2010. In 2014, he was appointed professor at the UAS FH Campus Wien by the University Board. His efforts to promote national cooperation between training institutions for Radiological Technology led to the founding of the "Austrian Conference of Programme Directors for Radiological Technology", which he has chaired since 2021.

Dr. Elena Alexa
Lecturer in Food Safety and Regulatory Affairs
Technological University Dublin (TU Dublin-Ireland)

Biography:

Dr. Alexa completed her PhD in 2017 in the field of Food Science and Biotechnology through an international co-tutorship between University of Burgos (Spain) and Dunarea de Jos University of Galati (Romania). Her research focused on investigating the phenotypic and genotypic profiles of methicillin-resistant Staphylococcus aureus strains isolated from food sources. Afterwards, Dr. Alexa enhanced her expertise and shared best practices in the realm of food safety, by joining the European Food Risk Assessment Fellowship Programme (EU-FORA) financed by the European Food Safety Authority.

Dr. Alexa has been involved in numerous national and international projects including Safe Consume, Safe Food, List ware, MetaResistBugs, HortAssure and Promise projects. Additionally, she serves as guest editor and reviewer for various peer-reviewed journals like Genes, Microorganisms, Frontiers in Microbiology. Currently, Dr. Alexa is an Assistant lecturer in Food Safety and Regulatory Affairs at Technological University Dublin (Ireland). In her role, she imparts knowledge to students pursuing a MSc in Sustainable Food Safety Management, as well as other Food Science programmes. Her research areas are Food Safety; Legislation; Microbiological Risk Assessment; Antimicrobial Resistance; Bioinformatics.

Prof. Mao Fei
Director of the Hematology Laboratory Teaching and Research Office.
School of Medicine.
Jiangsu University. China.

Biography:

Prof. Fei Mao received his bachelor's degree in medicine from Jiangsu University in 2002. He earned from Jiangsu University a master's degree in pharmacognosy (2005) and a PhD in medicine (2010). He completed his postdoctoral studies at the MD Anderson Cancer Center. From 2002 to 2007, he serves as a teaching assistant at Jiangsu University. From 2007 to 2012, he worked as a lecturer. From 2012 to 2018, he was promoted to Associate Professor. Now, he is a Full Professor. He is currently the director of the Haematology Laboratory Teaching and Research Office of Jiangsu University School of Medicine and a member of the academic group of the Laboratory Branch of Jiangsu Medical Association. His skills and expertise include cell culture, PCR, Western blot analysis, immunofluorescence, gel electrophoresis, cancer biology, cloning, DNA, SDS-PAGE, and DNA extraction.

Plenary Session

Prof. Dr. Moustafa Abdel-Khalek Abdellah
Dean of the Faculty of Applied Health Sciences Technology,
Pharos University in Alexandria

Comparative effects of Self-directed Learning Strategy (SDL) on students' achievement in applied Health Science Technology Studies. Experience of Pharos University in Alexandria

Prof. Dr. Allaa Aldeen Ramadan*, Prof. Dr. Moustafa Abdel-Khalek Abdellah, Dr. Sally Salah El-Saied*, Dr. Amira Mohamed Abdel Fattah, R. Hossam Al-Din Moustafa, student Yasmin Mahmoud Ibrahim.**
Faculty of Applied Health Sciences Technology, Faculty of Medicine****
Pharos University in Alexandria*, Sohag University.**

Abstract

Academic background: Teaching and learning strategies are one of the most important factors that affect the degree of achievement of students, and those with medium and low levels of achievement are among the most vulnerable groups of students that require the accurate choice of a teaching and learning strategy that gives them more learning opportunities among their peers.
Objectives of the study: This study aimed at comparative analysis of the effects of the strategy of self-directed learning versus traditional teaching on the level of achievement of students at the first level of the faculty of applied Health Sciences Technology at the Pharos University in Alexandria.
Methodology: The study used to compare the average achievement scores of students when they were treated using self-directed learning technique (SDL) versus traditional lecture teaching. Three research questions guided the study while three hypotheses were formulated and tested at the 0.05 level.
The study used the semi-experimental group, specifically the before, after, and unequal groups. The sample consisted of 313 students of the first level of the college, including 111 males (35.5%) and 202 females (64.5%), who were allocated into two groups (A&B), depending on their average score of the result of the 2ry school exam and the result of a pre-test they were offered on the first day of the academic year in the first level of the autumn semester 2023/2024. they were ranked in a descending order according to this result, with the group's total students (a- High Achievers; >56%, 156) ، group's total students (B- LOW Achievers; <56%, 157). The medical terminology course was taught to group (A) students with the traditional teacher-based lecture, while the same course was taught to group (B) through the same lecturer but using the self-directed learning strategy (SDL), with learning time increasing to twice the time offered for the initial group.

Results: The results showed that students who were taught the medical terminology course using a self-directed learning strategy (SDL) with double the time available for learning, representatives in group (B), low achievers, scores <56% before being included in the study, and their number = 157 (group-B, low achievements, those with Pre-Enrolment Marks <56% n=157) showed a higher positive interest, achievement and retention of knowledge than their counterparts taught for the same course using traditional lecture strategy, group representatives (A), high achievers, scores >56% prior to inclusion in the study, number = 156(Group-B, High Achievers, >56%) with scores >157%. The year's work grades in group (B) improved to approach their counterparts in group (A) so that the number of students with grades < 60% (4 students) versus (3 students) in group (A), and in the mid-semester exam the number of students with grades <60% (42 students) versus (26 students) in group (a), in the last semester exam, the number of students with grades <60% (32 students) versus (36 students) in group (A).

Recommendations: Based on these findings, the study recommended, among other things, that the teaching and learning strategy should be adjusted and self-directed learning (SDL) employed while increasing the time available for self-learning as a strategy in teaching/learning applied health science technology courses.

Keywords: Self-directed learning strategy, student achievement.

Towards interdisciplinary (INTERPROFESSIONAL) health care education

Prof. Dr. Ahmed Makhlouf
Badr University

Operational Definitions:

- **Interprofessional education: "When students from two or more professions learn about, from and with each other to enable effective collaboration and improve health outcomes" (WHO, 2010)**
- **Interprofessional collaborative practice: "When multiple health workers from different professional backgrounds work together with patients, families, careers [sic], and communities to deliver the highest quality of care" (WHO, 2010)**
- **Interprofessional teamwork: The levels of cooperation, coordination and collaboration characterizing the relationships between professions in delivering patient-centered care**
- **Interprofessional team-based care: Care delivered by intentionally created, usually relatively small work groups in health care, who are recognized by others as well as by themselves as having a collective identity and shared responsibility for a patient or group of patients, e.g., rapid response team, palliative care team, primary care team, operating room team**
- **Professional competencies in health care: Integrated enactment of knowledge, skills, and values/attitudes that define the domains of work of a particular health profession applied in specific care contexts**
- **Interprofessional competencies in health care: Integrated enactment of knowledge, skills, and values/attitudes that define working together across the professions, with other health care workers, and with patients, along with families and communities, as appropriate to improve health outcomes in specific**

Principles of the interprofessional competencies:

- **Patient/family centered, Community/population oriented, Relationship focused, Process oriented**
- **Linked to learning activities, educational strategies, and behavioral assessments that are developmentally appropriate for the learner, Able to be integrated across the learning continuum, Sensitive to the systems context/applicable across practice settings**
- **Applicable across professions, Stated in language common and meaningful across the professions, Outcome driven**

Three goals of the Interprofessional Collaborative Skills-Introduction (ICS-I) are:

- **Introduce students to the team-based aspect of the health care environment early in their career. Develop students' skills and awareness around respectful, appropriate and professional communication., Provide a clinical context to support learning from the Scientific Trunk and Doctoring Course.**

Chlorophyllin Derivatives Mediated PDT: A New Ray of Hope in The Horizon for Cancer Treatment

Iman Gomaa, Sara Ali, Hend Saraya, Aya Sebak, Mai Rady, Tarek El-Tayeb, Maha Zekri, Samarth Bhatt, Thomas Liehr, Nagia Afifi and Mahmoud Abdel-Kader

Prof. Dr. Iman Gomaa
Pharos University in Alexandria

Abstract:

Photodynamic therapy (PDT) is an approved clinical treatment with minimal invasiveness for different types of cancers. It has the advantage of high selectivity towards tumor tissue, and lack of severe and systemic complications, with the possibility of harmless repetitive applications. Its mechanism of action involves activation of a photosensitizer (PS) by an appropriate monochromatic light source, with long wavelength for deeper tissue penetration.

Chlorophylls are photosynthetic pigments present in all organisms that convert light energy into chemical energy. The tetrapyrrolic ring structure of chlorophylls show high level of light absorption in the red region of visible light. Activation of chlorophyllin derivatives results into generation of reactive oxygen species (ROS) that cause tumor cells toxicity and subsequent tumor regression. Therefore, PDT has been used for targeting several accessible tumors. It has been also used in treatment of precancerous and cancerous dermatological diseases.

In our studies, we were able to prove the distinctive role of chlorophyllin derivatives as highly efficient photosensitizers at both in vitro and in vivo PDT approaches. In comparison to the conventional chemotherapeutic drugs, no major alterations to the normal physiological condition have been detected. Additionally, successful PDT approaches in tumor cells killing were also achieved via liposomal delivery system of chlorophyllin derivatives. Mechanisms underlying PDT mediated tumor cells killing and in vivo tumor regression have been also investigated. Attempts towards the development of an efficient drug delivery system for improved tissue permeation, has been also conducted in an established murine tumor model for possible future clinical applications.

Key words: PDT, chlorophyllin derivatives, safety studies, in vitro & in vivo tumor therapy.

The current situation of the climate, reproductive health, and IPPF's

Assoc. Prof. Dr. Amany Aly Ahmed, PhD.
Associate Professor of Obstetrics,
Gynecological and Reproductive health Nursing department,
Faculty of Nursing, Sohag University & Pharos University in Alexandria

Abstract:

As the climate crisis worsens, the negative effects on reproductive health will only get worse. At the end of 2022, two UN conferences took place: the United Nations Conference on Climate Change (COP27) and the United Nations Conference on Biodiversity (COP15). Members came together at these international conferences to decide on goals for protecting our planet and its people from climate change. Carina Hirsch, the Margaret Pyke Trust's advocacy and project manager and reproductive health policy and planning instructor, was also present to discuss the need of include reproductive health in the conversation about climate change. When developing strategies to increase resilience to the climate crisis's more immediate effects as well as its slower-onset implications, and reproductive health should be a key factor. The International Professional Practices Framework, or IPPF, envisions a society in which everyone is free to make decisions about their reproductive orientation and general well-being without facing bias. This vision is threatened by the climate problem.

Climate change has been mostly caused by human activities since the pre-industrial era, or about 1850. In example, the amount of carbon dioxide in the Earth's atmosphere has rapidly increased due to the combustion of fossil fuels and forest destruction. The term "global warming" refers to an increase in the mean global temperature that has been linked to significant impacts on ecosystems, wildlife, and humanity globally.

IPPF will help individuals and communities adapt to the effects of the climate crisis by offering services in affected areas, particularly through humanitarian initiatives. IPPF is crucial for the ability to handle climate change. Moreover, IPPF will offer assistance in affected areas, particularly through humanitarian initiatives, to help individuals and communities cope with the consequences of the climate catastrophe. then will keep advocating for the recognition and endorsement of reproductive health as essential to adapting to climate change.

Critical Care and Anesthesia Technology Department

1.

Artificial intelligence and anesthesia: A narrative review

Prof. Dr. Safaa Hilal, MSc, MD
Professor of anesthesia, ICU and pain management
Founder and general director of Egyptian Society of Anesthesiology and Acute Care ESAAC

Background

AI in medicine confers the ability to analyze large volumes of data, find associations, and predict outcomes with ongoing learning by the computer.
It involves algorithm creation, testing and analyses with the ability to perform cognitive functions including association between variables, pattern recognition, and prediction of outcomes. AI-supported closed loops have been designed for pharmacological maintenance of anesthesia and hemodynamic management. Mechanical robots can perform dexterity and skill-based tasks such as intubation and regional blocks with precision, whereas clinical-decision support systems in crisis situations may augment the role of the clinician. The possibilities are boundless, yet widespread adoption of AI is still far from the ground reality.

2.

The effect of dexmedetomidine on wake-up test quality when muscle relaxants are not used: A randomized control trial

Wesam El-Din A. Sultan and Noha A. Afify
Department of Anaesthesia, Faculty of Medicine, Menoufia University, Egypt

Abstract:

Background and Aims: Stagnara wake-up test is a simple reproducible neuromonitoring method during spinal surgery which replaces the evoked potential monitoring in the absence of neuromonitoring facilities. Dexmedetomidine (DEX) effect on the intraoperative wake-up test is still unclear. The present study was conducted to evaluate the effectiveness of DEX on the quality of wake-up test during spinal correction surgery. Methods: A randomized controlled study was carried out over 62 patients randomized into two equal groups planned for elective minimally invasive corrective spine surgery. Instead of atracurium administration in the control group, patients in the experimental group were administered titrated continuous intravenous infusion of DEX at a dose of 0.2–0.7 µg/kg/hour. Lidocaine 2% spray around the vocal cords was done in both the groups to facilitate toleration of the endotracheal tube. Results: The DEX group showed statistically significant longer duration and better quality of the wake-up test. Statistically significant better haemodynamic state, a lower amount of intraoperative sedatives and higher amount of intraoperative analgesics were also evident in the DEX group. The postoperative Ramsay sedation scale was significantly lower in the DEX group just after extubation. Conclusion: The DEX use has shown an improving effect on the wake-up test quality, with slightly prolonged wake-up time. The present work supports the use of DEX as an adjuvant drug alleviating the need for the neuromuscular blockade, inducing a better haemodynamic profile, exhibiting better sedation and improving the awakening condition.

3.

Analgesic Effect of Addition of Pectointercostal Block to Serratus Anterior Plane Block in Breast Surgeries: A Randomized, Controlled Trial

Assoc. Prof. Dr. Hala Kobtan
Department of Anaesthesia, University of Alexandria, Egypt

Abstract:

Background: Ultrasound-guided serratus anterior plane block (SAPB) is an efficient perioperative analgesic modality for breast surgeries. SAPB does not block the anterior cutaneous branches of the intercostal nerves; thus, it does not provide adequate analgesia for the parasternal region and the medial side of the breast. A new parasternal block, the pectointercostal fascial plane block (PIFB) has been developed to overcome this issue.
Objectives: The study aimed to evaluate the perioperative analgesic effect of using PIFB in addition to SAPB. The primary outcome was to evaluate the postoperative pain score. The secondary outcomes were to assess perioperative opioid requirements, hemodynamic stability, and the satisfaction of the patient and surgeon.
Study Design: The current study was a prospective, double-blinded, randomized controlled study. The current study was registered at the Pan-African Clinical Trials Registry (PACTR202001789968542) and was designed after obtaining ethical institutional approval (Institutional Review Board No 00012098, Federalwide Assurance No 00018699).
Setting: The study involved 60 women between 21 and 69 years old with breast cancer who were scheduled for modified radical mastectomy or conservative breast surgeries in a university hospital.
Methods: After verbal and informed written consent, the patients were allocated to Group 1, which received SAPB, and Group 2, which received SAPB with PIFB. We assessed the Visual Analog Scale (VAS), perioperative opioid requirements, intraoperative hemodynamic stability, rescue analgesia, and complications. Patient and surgeon satisfaction were surveyed using a questionnaire where one is very dissatisfied and 5 is very satisfied.
Results: Intraoperative mean arterial blood pressure (MABP) and heart rate were significantly lower in Group 2 (SAPB+PIFB). The number of patients who needed intraoperative fentanyl was also significantly lower in Group 2 (SAPB+PIFB) (P value = 0.010). Postoperative VAS showed no significant difference in both groups. The number of patients who needed postoperative rescue morphine, time for the first rescue analgesia, first morphine dose (mg), and total opioid consumption were also comparable for both groups. Patient satisfaction and surgeon satisfaction were comparable for both groups (P values

	= 1.000 and 0.496, respectively). **Limitations: VAS was not recorded during movements and no follow-up was done to detect the potential effect on chronic postmastectomy pain. Moreover, after reviewing the literature, there was no efficient data about adding PIFB with different regional blocks for breast surgery.** **Conclusions: The number of patients who needed intraoperative fentanyl, as well as the MABP and heart rate were significantly lower in Group 2 (SAPB+PIFB). Postoperative vital signs, VAS, postoperative analgesic requirements, and opioid consumption were comparable for both groups. Patient satisfaction was comparable for both groups, while surgeon satisfaction was higher in Group 2 (SAPB+PIFB) but statistically not significant.**

Medical Laboratory Technology Department

1.

Epidemiological profile of microbial keratitis in Alexandria-Egypt a 5 years retrospective study

Assoc. Prof. Dr. Mona Mohamed Tolba
Assoc. Professor of Parasitology
Department of Parasitology
Medical Research Institute

Abstract:

Objective: To evaluate the epidemiologic profile of microbial keratitis in Alexandria- Egypt, with special emphasis on risk factors, visual outcome and microbiological results.

Methods: This retrospective study reviewed fles of patients treated for microbial keratitis during a period of 5 years at Alexandria Ophthalmology Hospital Cornea Clinic, Alexandria- Egypt, between February 2017 and June 2022. The patients were evaluated for the risk factors e.g., trauma, eyelid disorders, co-morbidities, and contact lens use. They were also evaluated for their clinical picture, the identified microorganisms, visual outcomes, and complications. Nonmicrobial keratitis and incomplete fles were excluded from the study.

Results: A total of 284 patients were diagnosed as microbial keratitis in our study. Viral keratitis was the most common cause of microbial keratitis (n=118 (41.55%)), followed by bacterial keratitis (n=77 (27.11%)), mixed keratitis (n=51 (17.96%)), acanthamoeba keratitis (n=22 (7.75%)) and the least cause was fungal keratitis (n=16 (5.63%)). Trauma was the most common risk factor for microbial keratitis (29.2%). Fungal keratitis had a statistically signifcant association with trauma, while the use of contact lenses had a statistically signifcant association with Acanthamoeba keratitis The percentage of culture-positive results in our study was 76.8%. Gram-positive bacteria were the most frequently isolated bacterial isolate (n=25 (36.2%)), while flamentous fungi were the most frequently isolated fungi (n=13(18.8%)). After treatment, there was a signifcant increase in the mean visual acuity among all groups; it was signifcantly higher in Acanthamoeba keratitis group with a mean diference of 0.262±0.161 (p=0.003).

Conclusion: Viral keratitis followed by bacterial keratitis were the most frequent etiologic agents causing microbial keratitis found in our study. Although trauma was the most frequent risk factor for microbial keratitis, contact lens wear was found an important preventable risk factor for microbial keratitis in young patients. Performing culture properly whenever indicated before starting antimicrobial treatment increased the cultures' positive results.

Keywords: Microbial keratitis/risk factors, Viral keratitis, Microorganisms, Gram-positive bacteria, Filamentous fungi, Contact lens, Acanthamoeba.

2.

Physiotherapeutic Protocol and ZnO Nanoparticles: A Combined Novel Treatment Program against Bacterial Pyomyositis

Assoc. Prof. Dr Bassma Hassen
Assoc. Professor of Microbiology
Faculty of Applied Health Sciences Technology
Department of Medical Laboratory Technology
Pharos University in Alexandria

Abstract:

Myositis tropicans or pyomyositis is a muscle inflammation resulting from a bacterial infection of skeletal muscle (commonly caused by Staphylococcus aureus) that usually leads to hematogenous muscle seeding. The present study was designed to estimate the role of ZnO-NPs and a physiotherapeutic program in the management of induced biceps femoris atrophy in rats through histological, biochemical, and radiological examinations at different time intervals. At the beginning, several bacterial strains were evaluated through a proteolytic enzyme activity assay and the highest activity was recorded with the Staphylococcus aureus strain. ZnO-NPs were synthesized with the arc discharge method with an average size of 19.4 nm. The antibacterial activity of ZnO-NPs was investigated and it was revealed that the prepared ZnO-NPs showed a minimum inhibitory concentration of 8 µg/mL against the tested bacterium. The cytotoxicity of the prepared ZnO-NPs was tested in C2C12 myoblast cells, and it was elaborated that CC50 was 344.16 µg/mL. Biceps femoris pyomyositis was induced with a potent strain (Staphylococcus aureus); then, a physiotherapeutic program combined with the prepared ZnO-NPs treatment protocol was applied and evaluated. The combined program claimed antibacterial properties, preventing muscle atrophy, and resulted in the most comparable value of muscle mass.

Nutrition and Food Safety Technology Department

1.

Nutritional Assessment of Patients with End Stage Renal Disease Undergoing Hemodialysis in Alexandria, Egypt

Assoc. Prof. Dr. Doaa M. Genena and Dr. Eman E. Elgohary.
Presented by: Dr. Nourhan A. Abdel-Rehiem (Elite Hospital)

Abstract:

Background: Malnutrition (MN) is so prevalent in hemodialysis patients (HD patients) worldwide that it adversely affects their prognosis; being associated with an increased morbidity and mortality in these patients. However, recent data regarding the nutritional status among HD patients in Egypt is lacking. The purpose of this study was to evaluate the nutritional status of these patients at the dialysis unit of El-Moasat University hospital and medical research institute in Alexandria, Egypt using an economical nutritional assessment protocol consisted of anthropometric measurements, a biochemical blood measurement (serum albumin) and the seven-point Subjective Global Assessment (SGA).
Settings and Design: A cross sectional study was done at the dialysis unit of El-Moasat University Hospital and Medical Research Institute in Alexandria, Egypt.
Subjects and Methods: The study included 160 patients undergoing maintenance hemodialysis. Their nutritional status was assessed using subjective global assessment, anthropometric and biochemical measurement (serum albumin).
Statistical analysis used: Data were fed to the computer and analyzed using IBM SPSS software package version 20.0.
Results: The present study revealed that among HD patients, 86.3% were mild to moderately malnourished. Mean serum albumin, BMI, TSF and MAMC were significantly lower in malnourished patients compared to well nourished (p= <0.001). MN was more prevalent among HD patients aged ≥45 years (51.4%) .Older HD patients (≥45 years) had a significantly lower level of Serum Albumin (3.96± 0.41, p = 0.039), BMI (23.36±4.34, p=0.004), TSF (14.29±4.07, p=0.001) and MAMC (18.18±2.82, p=0.001) when compared with younger HD patients (<45 years). The seven-point SGA correlated positively with objective nutritional markers including Albumin, BMI, TSF, MAMC and Age.
Conclusions: The study concluded that MN is prevalent among HD patient in Alexandria, Egypt and that the Subjective global assessment is a reliable, precise, and rapid method for estimating the nutritional status in patients on HD.
Key Messages: Periodical monitoring of the nutritional status should be part of the follow-up of dialysis patients, and is fundamental for preventing, diagnosing, and treating MN.

Key words: Malnutrition; Nutritional Status; Hemodialysis Patients; Subjective Global Assessment (SGA).

2.

Brown Adipose Tissue—A Therapeutic Target in Obesity

Assoc. Prof. Dr. Amany Salama
Nutrition and Food Safety Technology Department
Faculty of Applied Health Sciences Technology
Pharos University in Alexandria

Abstract:

Obesity is a growing global health concern, with its consequences impacting various aspects of life. While current treatments offer limited success, researchers are exploring novel approaches, and one promising avenue lies in browning of white adipose tissue (WAT).

Here's a breakdown of the key points:
What is WAT?
WAT is the primary fat storage tissue in our bodies. It plays a crucial role in energy balance by storing excess energy as triglycerides. However, excessive accumulation of WAT contributes to obesity and its associated health risks like diabetes and heart disease.
What is BAT?
• Brown adipose tissue (BAT) is a specialized type of fat with a distinct function: thermogenesis. It burns energy to generate heat, contributing to maintaining body temperature and boosting metabolism.
• Activating BAT has emerged as a potential strategy for combating obesity due to its energy-burning ability.
What is Browning?
• Browning refers to the process of converting white fat cells into "beige" fat cells, which share some characteristics with brown fat cells. These beige cells gain the ability to burn energy through thermogenesis, mimicking the function of BAT.
• By promoting browning of WAT, researchers hope to increase overall energy expenditure and combat obesity.
Why is it an Attractive Target?
• Targeting WAT is appealing because it represents a vast energy reservoir within the body. Converting even a small portion of WAT to beige fat could significantly boost metabolism and promote weight loss.
• Browning offers a potential long-term solution by addressing the root cause of obesity - the imbalance between energy intake and expenditure.
• Unlike traditional weight loss methods that focus on calorie restriction, browning offers a potentially more sustainable approach by manipulating the body's own energy-burning mechanisms.
Overall, browning of white adipose tissue presents a novel and promising therapeutic target for tackling obesity and its associated health problems. Ongoing research holds immense potential for developing effective strategies to combat this global health challenge.

3.

New Prospective for the influence of green algae on obesity and its Comorbidities

Dr. Sally Salah
Nutrition and Food Safety Technology Department
Faculty of Applied Health Sciences Technology
Pharos University in Alexandria

Abstract:

Obesity is a global disease threatens million people and cause death every year owing to overweight. Furthermore, obesity is a main cause of cardiovascular disease and type 2 diabetes. Preventing and treating obesity has been a prevailing concern for many countries also the uptake of natural drugs become primary focus of researcher because the need to have safer and efficient drugs. In this article we evaluate the effect of green seaweed; *E. intestinalis* as a therapeutic supplement for obesity and obesity-related diseases. Female albino rats were divided into four groups; control negative (CN), control positive (CP), positive treated with *E. intestinalis* crude extract (M) and *spirulina* powder supplement (SP). Female rats was fed by algal extract for 4 weeks and weight gain change was determined and at the end of the treatment period blood was collected and different metabolic parameters was measured in order to evaluate the anti-hyperlipidemic, anti-inflammatory, and antiobesity effects of the *Enteromorpha intestinalis* crude extract compared to *spirulina* microalgae powder supplement on rats fed a high-fat diet. *E. intestinalis* extract (M) showed significant effect in suppressing weight gain. Also, M group showed significant effect in suppressing Plasma total cholesterol and triglycerides recording about 118mmolL^{-1} and 62 mmolL^{-1}, respectively which is nearly same as control negative group. Also, low density lipoprotein, leptin, glucagon like peptide-1 and peptide y y recorded about 60.55 mmolL^{-1}, 8.63 mmolL^{-1} 11.93 mmolL^{-1} and 102.8 mmolL^{-1}.

***Keywords: Enteromorpha intestinalis*, *Spirulina*, anti-obesity, anti-inflammatory.**

Radiology and Medical Imaging Technology Department

1.

Role of PET CT in assessment of hepatic steatosis in cancer Patients

Dr. Mohamed El-Safwany
Lecturer and coordinator of Radiology and Medical imaging Technology Department, Faculty of Applied Health Sciences Technology, Pharos University Alexandria.

Abstract:

Hepatic steatosis is the most common chronic hepatic disease. Imaging diagnosis of hepatic steatosis has been evaluated as an alternative to invasive histological diagnosis. Study aims The study aimed to assess the effect of hepatic steatosis on Flourine-18 fluorodeoxyglucose (18F-FDG) uptakes in cancer patients. Patients and Methods Blood samples were collected from 50 cancer patients and analyzed to calculate fatty liver index and Hepatic steatosis index (HIS). Hepatic steatosis examined using high-resolution ultrasound and positron emission tomography—computed tomography (PETCT). Linear attenuation coefficient, standardized-uptake value (SUV) mean (SUV mean), and SUV maximum (SUVmax) were measured. Accordingly, patients were divided equally into non-fatty liver, and fatty liver groups. Results A significant increase in SUVmax and SUV mean was observed in the fatty liver group more than in the non-fatty liver group. HSI significantly increased in the fatty liver group compared to the non-fatty liver group. Liver tissue uptake FDG was significantly correlated with HSI values. SUV max significantly correlated with body mass index (BMI) in the non-fatty group only. Conclusion: Hepatic changes in cancer patients affect the liver metabolic activity and thus the 18 F-FDG uptakes. Therefore, further corrections should be considered when the liver is used as a comparator for PET-CT scans of cancer patients.

Biomedical Equipment Technology Department

1.

Nanoparticles in Enhancing Microwave Imaging and Microwave Hyperthermia Effect for Liver Cancer Treatment

W. Maamoun, Mohamed I. Badawi, Ayman A. Ali, Y. Khedr

Assoc. Prof. Dr. Mohamed I. Badawi
Biomedical Equipment Technology Department
Faculty of Applied Health Sciences Technology
Pharos University in Alexandria (PUA), Egypt

Abstract:

Hyperthermia therapy is a promising therapy for liver cancer treatment that utilizes external electromagnetic waves to heat the tumor zone to preferentially kill or minimize cancer cells. Nevertheless, it's a challenge to realize localized heating of the cancer tissue without harming the surrounding healthy tissue. This research proposes to utilize nanoparticles as microwave absorbers to enhance microwave imaging and achieve localized hyperthermia therapy.
A realistic 3D abdomen model has been reconstructed by using the 3D Slicer software platform was implemented, then exporting the obtained CAD model to Computer Simulation Technology (CST STUDIO) for applying the Finite Element Method (FEM). Next investigating both imaging and treatment capability. The specific absorption rate and temperature distribution were computed without nanoparticles and with different types of nanoparticles such as gold (GNPs) and silver nanoparticles at two different frequencies 915MHz and 2.4GHz. By comparing results, it was seen that Silver nanoparticles can make a great enhancement in raising the temperature However, this result was unsatisfactory but, after adding gold nanoparticles the temperature exceeded 42°C at a frequency of 915 MHz which achieved the hyperthermia treatment without harming the nearby healthy tissue, GNPs also can achieve a great enhancement in SAR result.

2.

A Novel Morphological Analysis of DXADICOM Images by Artificial Neural Networks for Estimating Bone Mineral Density in Health and Disease

Ehab I. Mohamed, Radwa A. Meshref, Samir M. Abdel-Mageed, Moustafa H. Moustafa, Mohamed I. Badawi, Samy H. Darwish

Dr. Radwa A. Meshref
Medical Equipment Department
Faculty of Applied Health Sciences Technology
Pharos University in Alexandria (PUA)

Abstract:

One of the best methods for diagnosing bone disease in humans is site-specific and total bone mineral density (BMD) measurements by Dual-energy X-ray Absorptiometry (DXA) machines. The basic disadvantage of this technology is inconsistent BMD measurements among different DXA machines from different manufacturers due to different image analysis algorithms. The objective of the present study was to apply artificial neural networks (ANNs) to estimate total BMD for diagnosing a population of XX with and without pathology, using extracted features from DXA-DICOM images based on the Histogram and Binary algorithms as compared to reference BMD measurements by DXA machine. The sample size comprised 3000 male and female participants with an age range 22 49 years, who were referred to us for diagnosis and/or treatment and for DXA total body scans in the period from January 2016 till December 2017. We constructed an entry computer data-logging visible unit, where we applied morphological operations to get a specific bone image, and used their extracted feature vectors as inputs to ANNs with cascade training, gathering, and testing for DXA-DICOM image processing. The multilayer feed-forward ANN set up its initial weights, carried out training and initiated the recall mode, and finally observed its decision and interaction based on estimated BMD. The ANN construction was carried out using a 3-layer architecture, with one hidden layer of 85 neurons. The input layer has neuron numbers equal to 256 for the Histogram and 77,321 for Binary algorithms, respectively. Total BMD estimation performance based on the Binary algorithm was capable of identifying all DXA-DICOM images with an accuracy of 100% for the training, cross-validation, and testing of the ANN phases. We believe this strategy will represent the means for standardizing bone measurements of all DXA Q2 machines, regardless of the manufacturer.

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Advancements in Alzheimer's Detection through AI: Precision Diagnosis using Selected MRI Slices

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Abstract:

Alzheimer's disease (AD) is the most common form of dementia, characterized by memory loss and cognitive decline. Imaging techniques, such as magnetic resonance imaging (MRI) and positron emission tomography (PET), play a crucial role in the diagnosis, monitoring, and prediction of Alzheimer's disease. Automated classification methods, particularly using deep learning algorithms, have been developed to predict the individual diagnosis of AD and mild cognitive impairment (MCI) using MRI scans. These methods can provide support for clinicians in diagnosing and monitoring patients with AD . The benefits of using automated classification for Alzheimer's disease diagnosis include improved accuracy and early detection, which are critical for early treatment and effective disease management. Additionally, automated classification methods can assist in identifying structural changes, patterns of atrophy, and underlying pathological changes, such as the accumulation of amyloid plaques and neurofibrillary tangles, providing valuable insights for clinicians in the diagnosis and monitoring of AD. The proposed automated classification technique can serve as a noninvasive diagnostic tool for Alzheimer's disease, with the capability of defining early stages of the disease. This technique utilizes deep learning algorithms to predict the individual diagnosis of Alzheimer's disease and mild cognitive impairment using magnetic resonance imaging (MRI) scans. By accurately identifying structural changes, patterns of atrophy, and underlying pathological changes, such as the accumulation of amyloid plaques and neurofibrillary tangles, this method can aid in the early detection and diagnosis of Alzheimer's disease, enabling timely intervention and effective disease management.

Dental Prostheses Manufacture Technology

Knowledge, awareness, and perception of digital dentistry among Egyptian dentists: a cross-sectional study

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Abstract:

Background Digital dentistry has revolutionized the way dental treatment is offered to patients. It became essential for dental practitioners to be well-informed about this technology to improve the quality of care offered and increase patient satisfaction. This study aimed to assess the level of knowledge, awareness, and perception of Egyptian dentists toward digital dentistry. Methods An online-based cross-sectional study was conducted using social media platforms from November 2022 to March 2023. Our study sample included dentists with different levels of experience, specialties, and working in different health sectors in Egypt. A questionnaire arranged in 4 sections and 23 questions was used as the study data collection tool. The data were tabulated and analyzed using SPSS software. Results A total of 402 participants filled out this questionnaire. 50.7% of which were females, 42.8% were between 20–29 years old and 42.3% were general practitioners. Furthermore, the main practice of 27.6% was in governmental dental clinics. Moreover, 47.3% and 64.2% of participants had Moderate knowledge and awareness respectively. While 75.9% of them had a high perception of practicing digital dentistry. Females and practitioners in governmental clinics had significantly lower awareness scores, while faculty teaching staff had significantly higher scores ($P \leq 0.05$). On the other hand, practicing in the Great Cairo region and urban areas was associated with significantly higher knowledge scores ($P \leq 0.05$). Similarly, Prosthodontists, periodontists, and restorative dentists had significantly higher scores when compared with general dentists ($P \leq 0.05$). Conclusions About half of the study participants had Moderate knowledge and awareness levels, while about three quarters of them had a high level of perception toward practicing digital dentistry. Therefore, more attention should be given to providing dental education programs in this important field at both the undergraduate and postgraduate levels by policymakers.