11th Student Research Day
May 16, 2018

Faculty of Allied Health Sciences
Abstracts
His Highness
Sheikh Sabah Al- Ahmad Al-Jaber Al-Sabah
The Amir of the State of Kuwait

His Highness
Sheikh Nawaf Al-Ahmad Al-Jaber Al-Sabah
The Crown Prince of the State of Kuwait

His Highness
Sheikh Jaber Mubarak Al-Hamad Al-Sabah
The Prime Minister of the State of Kuwait
Professor Hussein Ahmed Al-Ansari
President, Kuwait University
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MESSAGE: DEAN

Dear Students, Staff Members and Colleagues,

Research is the driving force of any academic institution. It is with great pleasure that I welcome all the staff and students to the 11th Student Research Day of the Faculty of Allied Health Sciences of the Kuwait University.

The Student Research Day is a day for the students and faculty to meet and discuss the outcome of various research projects undertaken during the year. The success of the past ten years’ of Student Research Day at the Faculty of Allied Health Sciences reflects the intensive nature of the research carried out by our undergraduates and graduate students and the teamwork and commitment of the Faculty members who supervised the Research Projects.

My hope is that the Student Research Day in the Faculty of Allied Health Sciences should promote intellectual curiosity, appreciation of scholarly inquiry and the ability to work both independently and collaboratively.

My sincere thanks to the President of Kuwait University, University and Faculty administration, the members of Organizing Committee, Students, Academic and Support staff at the Faculty of Allied Health Sciences who have made this year’s event possible.

I wish all our students great success in their academic and professional life.

Best wishes

Dr. Adel Al-Asfour,
Acting Dean,
Faculty of Allied Health Sciences
Health Sciences Centre,
Kuwait University
KUWAIT UNIVERSITY
FACULTY OF ALLIED HEALTH SCIENCES
Under the Patronage of
Prof. Hussain Ahmed Al-Ansari
President of Kuwait University

11th Student Research Day
MAY 16, 2018

Venue: Health Sciences Center Auditorium | Jabriya | Kuwait University

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OPENING OF THE 11th STUDENT RESEARCH POSTER DAY and Poster Viewing

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:: Presenting authors are requested to stay by their posters ::
# Organizing Committee

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<td>Prof. Adel Al-Asfour</td>
<td>Acting Dean</td>
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<td>Prof. Chacko Mathew</td>
<td>Chairman</td>
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<tr>
<td>Mr. Fahad Al Bader</td>
<td>Asst. Administration Director</td>
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<tr>
<td>Mr. Hamad Al Mutawa</td>
<td>Head, Public Relations</td>
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<tr>
<td>Mr. Farooq Al Hajji</td>
<td>Head, Services &amp; Follow Up</td>
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<tr>
<td>Mr. Stanley Glebocki</td>
<td>Executive Secretary</td>
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<td>Dr. Roqayyah Taqi</td>
<td>HIA</td>
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<td>Prof. Chacko Mathew</td>
<td>MLS</td>
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<td>Dr. Naser Al Otaibi</td>
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<td>Dr. Maath Al-Haddad</td>
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<td>Dr. Mohsen Dashti</td>
<td>RS</td>
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<tr>
<td>Ms. Latifa Al Wazzan</td>
<td>ELU</td>
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<tr>
<td>Ms. Soundos Freeh Jassem</td>
<td>(HIA Student representative)</td>
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<tr>
<td>Mr. Ibrahim Al-Mutairi</td>
<td>(MLS Student representative)</td>
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<tr>
<td>Ms. Ghadeer Al-Haddad</td>
<td>(OT Student representative)</td>
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<td>Ms. Zahra Al Buloushi</td>
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<td>Ms. Hadeel Al-Jarallah</td>
<td>(RS Student representative)</td>
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ORGANIZING SUB-COMMITTEES

Scientific Affairs Sub-Committee

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<tr>
<td>Prof. Chacko Mathew</td>
<td>Coordinator</td>
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<tr>
<td>Dr. Eiman Al-Jafar (HIA)</td>
<td>Member</td>
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<tr>
<td>Dr. Anwar Al-Awadhi (MLS)</td>
<td>Member</td>
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<td>Dr. Naser Al Otaibi (OT)</td>
<td>Member</td>
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<td>Dr. Maath Al-Haddad (PT)</td>
<td>Member</td>
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<tr>
<td>Dr. Ajit Brindhaban (RS)</td>
<td>Member</td>
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<tr>
<td>Ms. Latifa Al Wazzan (ELU)</td>
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Finance & General Purpose Sub-Committee

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<td>Mr. Fawaz Al Hasawi</td>
<td>Head, Purchasing</td>
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Publicity & Public Relations Sub-Committee

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<td>Ms. Aisha Al-Summait</td>
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<tr>
<td>Ms. Fatma Al-Attar</td>
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Logistics Sub-Committee

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<td>Mr. Farooq Al Hajji</td>
<td>Head, Services &amp; Follow Up</td>
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<td>Mr. Ali Bilal</td>
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Reception Sub-Committee

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IT Sub-Committee

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<td>Dr. Roqayyah Taqi (HIA)</td>
<td>Coordinator</td>
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<tr>
<td>Mr. Abdulwahab Al-Muhanna</td>
<td>(Head, TSA)</td>
</tr>
<tr>
<td>Mr. Nabeel Akhtar (HIA)</td>
<td>Member</td>
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<tr>
<td>Ms. Hanadi Al-Humaidi (HIA)</td>
<td>Member</td>
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<td>Ms. Jeny Mathew (Engineer)</td>
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ABSTRACTS
From outside the Faculty
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1. Molecular Basis of Echinocandin Resistance in Clinical Candida Glabrata Isolates in Kuwait
Zahraa Al-Baqsami, Suhail Ahmad, and Ziauddin Khan
Department of Medical Laboratory Sciences, Faculty of Allied Health Sciences, Kuwait University,

INTRODUCTION
*Candida glabrata* is the second/third most common *Candida* species that causes candidemia or invasive candidiasis in at-risk patients. It is inherently less susceptible to azole anti-fungal drugs and can also develop resistance to echinocandins, mainly due to missense mutations in hot-spot HS-1 and HS-2 regions of *FKS1* and *FKS2*, as a result of prolonged drug exposure. This study determined the molecular basis of resistance in phenotypically identified echinocandin-resistant *C. glabrata* isolates in Kuwait.

METHODS
*C. glabrata* isolates (n=76) recovered from various clinical specimens were studied. The isolates were initially identified by the Vitek2 system. Identity was confirmed by multiplex PCR (mPCR) assay that simultaneously detects *C. glabrata* sensu stricto, *Candida nivariensis* and *Candida bracarensis*, and/or by PCR-sequencing of rDNA. Antifungal susceptibility testing to fluconazole, caspofungin, micafungin and amphotericin B was determined by an E-test. Mutations in HS-1 and HS-2 of *FKS1* and *FKS2* were detected by PCR-sequencing of the respective gene fragments.

RESULTS
All 76 isolates were identified as *C. glabrata* by Vitek2 and also by mPCR. Based on EUCAST breakpoints, 71 (93%) isolates were susceptible (MIC = <0.032 µg/ml) and 5 (6.5%) isolates were resistant (MIC = ≥0.032µg/ml) to micafungin. Four of five isolates phenotypically resistant to micafungin contained S663P mutation in HS-1 of *FKS2* gene. The 71 isolates phenotypically susceptible to micafungin contained wild-type sequences in HS-1 and HS-2 of *FKS1* and *FKS2* genes.

DISCUSSION & CONCLUSION
Although acquired echinocandin resistance is rare among *Candida* species, its incidence is increasing in *C. glabrata*, resulting in clinical failure among infected patients. Other data shows that most echinocandin-resistant *C. glabrata* isolates contain mutations in HS-1/HS-2 of *FKS1/FKS2* genes and their rapid detection will contribute to better management of infected patients.
2. The Effect of Fatigue on Static and Dynamic Balance in Healthy Athletic Population
   Abdullah Alabdulwahab, MSc, PT, Saleh Alnori, PT, Mohammad AlKattan, PhD
   Shikhan AlFarsi Center and Farwaniya, Hospital, Ministry of Health

INTRODUCTION
Athletes are at risk of becoming injured throughout the course of their career, especially, if their sports field is constantly challenging their proprioception abilities. Athletes balance was the subject of many studies. However, balance was usually tested in a lab setting without mimicking the circumstances of an actual sport participation and involving certain aspects of it like fatigue. The purpose of this study was to assess the effect of fatigue in healthy athletic population on static and dynamic balance.

METHODS
The study had 40 participants divided into two groups, control and experimental. The control group was tested twice by using Nintendo Wii U and Y Balance test for static and dynamic balance respectively, without introducing the fatigue protocol. The experimental group were tested pre-fatigue protocol and post fatigue protocol by the same tools.

RESULTS
The results showed a significant difference in static balance between the control and experimental group in post testing, and within the experimental between pre-fatigue and post fatigue conditions, there were not any significant differences in the dynamic balance testing.

DISCUSSION & CONCLUSION
Fatigue imposes a real threat to athletes’ static balance, and introducing fatigue conditions in training athletes' balance in a safe environment may be essential to improving their balance under similar circumstances.
Health Informatics and Information Management
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<td>Rasha AlHatim Zainab Altabtabai Dr. Maha AlNashmi</td>
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1. Wearable Devices in Healthcare
Sara Ahmad Yousef, Maha Al-Nashmi PhD

BACKGROUND
Wearable devices are a form of data collection that provides new sources of understanding patient behavior. Having the ability to track one's health data through a wearable device and then quantify it is expected to help drive better outcomes in health care. Wearable devices are becoming an important interface between users and fitness activities. Health and fitness are increasingly becoming a part of people's everyday lives. The purpose of this poster is to educate people about the benefits of wearable devices in healthcare.

METHOD
Scope literature review was performed in several search engines such as Google, Ovid etc.

CONCLUSION
Wearable devices are valuable instruments for the improvement of health and sports performance. Evidence for use of these devices in professional sports is still limited. Future developments are needed to establish training protocols using data from wearable devices.
2. Observing the Work Risks in the Medical Record Department (Employees Safety)
   Maryam AL-Zaid¹, Lujain Alwazzan², Maha Alnashmi, PhD

INTRODUCTION
This research provides an overview of the work risks in the medical record department.

METHODS
Informal/formal conversational, survey, and check lists were used. The data was collected by observing the workplace and examining incident reports at three general and government hospitals. The study targeted a sample of the medical record department staff of both genders with the age range of 21 to 50 years.

RESULTS
Out of 78 respondents, 56 employees experienced stress, headache, anxiety, tiredness, back pain, and poor concentration while working, whereas 22 employees did not experience any of these.

DISCUSSION
This study provides an overview of the work risks in the medical record department. The results confirm that the major work risks in the medical record department employee are psychological conditions due to work pressure. Most employees are comfortable regarding the office ergonomic and environmental conditions.

CONCLUSION
The medical record department is a cornerstone of healthcare organizations; as a result, there is a need to improve the workplace environment for the employees. Therefore, this study aims to pinpoint and any environmental and work-related risks in the medical record department. The data was collected by observing the workplace, examining incident reports at three general and government hospitals. Check sheets and a self-developed survey were also used. The survey included questions that showed how satisfied the employees were, the amount of risks they faced, if the workplace was safe for them, and what kind of hazards they were exposed to.
3. Using of Health Information Technology to Reduce Diagnostic Errors: Perception of HSC Students

Tarik Ali Ismail, Dr. Maha Al-Nashmi and Mr. Nabeel Akhtar

INTRODUCTION

A medication error is a failure in the treatment process that leads to or has the potential to lead to harm to the patient. Avoiding medication errors is important in balanced prescribing, which is the use of a medicine that is appropriate to the patient's condition and within the limits created by the uncertainty that attends therapeutic decisions, in a dosage regimen that optimizes the balance of benefit to harm.

METHODS

The study focuses on medication errors and how to reduce them by observing the techniques of medication processes from medical practitioners and devise a plan to ensure medication accuracy. The study also focuses on how the effective use of information technology would reduce medication errors.

RESULTS

Eighty students of different years studying in the Health Science Center participated in the study. It was found that 67.7% of drug errors occur when there is a confusion when prescribing two drugs that have similar names. We also found that 62.5% of the times, the physician prescribed the wrong dosage for the patient, which shows that there is a lack of training among physicians for drug prescription. Most of the students agree to using information technology to detect medication errors, which would result in improving medication procedures.

DISCUSSION

Training in the use of Information Technology should be done by the healthcare organizations for its medical staff to improve quality of care. Proper information systems need to be implemented and its policies and procedures need to be enforced to reduce medication errors.

CONCLUSION

Medication errors, which can lead to adverse drug reactions, require clear and unambiguous definitions so that patients, prescribers, manufacturers, and regulators can all understand each other. The classification of medication errors, based on how errors occur, can suggest strategies that help reduce their occurrence.
4. Common Mental Disorders among Health Sciences Center Students in Kuwait University
Jumana Y. AlMumen, Supervised by Dr. Maha AlNashmi

INTRODUCTION
Mental Health is very important and has an effect on academic performance. There is a high expectation that the quality of professors can impair and the mental health of students. Stress is one of the factors that cause depression and anxiety. Course loads in medical fields may lead to mental disorders and anxiety. Teaching members may not be aware of their impact on the students’ health. Assessing the risk factors is the first brick of saving the future Health Sector and tomorrows care providers. The purpose of the study is estimating the prevalence and assessing the risk factors of mental disorders among medical students to limit the development of mental illnesses in a young age.

METHODS
A Cross-sectional study was performed on a sample population. Common mental disorders were identified according to 21-item Self-Reporting Questionnaire. The survey included demographic data, the period of, and a mental health section.

RESULTS
Too hundred and thirty-seven students participated in the survey. The response rate was 67.7%. 78.2% of students agreed that they are getting less sleep since they got into college. 66.3% of students are having focusing troubles. 49.8% believe that their mental health got worse after getting into college.

DISCUSSION
Debates should be around two questions, which are is medical school one of the risk factors of mental health disorders and is the stressed environment in medical schools necessary to make students stronger than the future barriers? This study also shows the perception of the medical students toward the stressful environment at the university.

CONCLUSION
University can have a huge affect on the students’ mental health. Stress, overthinking, and being under pressure may lead to mental health disorders. Medical students are living in a society that believes in the stigma of mental health services usage. Early treatments and assessing the risk factors limits developing mental illnesses in a young age.
5. Measuring Hospital Staff Satisfaction of the Medical Record Department in Kuwait Government Hospitals

Fatimah Hashem, Muna Fairouz, and Maha Al-Nashmi, PhD

INTRODUCTION
This research examines similarities and differences among staff satisfaction levels in the medical record department with the aim of evaluating the performance of the medical record department (MRD) in Mubarak Al-Kabeer and Al-Farwaniya hospitals.

METHODS
A descriptive cross-sectional design was carried out, and a total of 81 physicians, nurses and physiotherapists recruited from two governmental hospitals in Kuwait participated in the study. Data were collected by using a questionnaire. SPSS-PC software version 25 was used to analyse the collected data.

RESULTS
A total of 81 participants (57 females and 24 males) completed the questionnaire; 30 of the sample (37%) were physicians, 47 (58%) nurses, and 4 (4.9%) physiotherapists. The results showed that the majority of the participants (93.8%) were satisfied with the services provided by the MRD. This study also found that the years of service for medical staff has an influence on the level of satisfaction with the range of 3-5 years of employment showing the highest level of satisfaction.

DISCUSSION & CONCLUSION
This study showed that the medical staff in the governmental hospitals has a high level of satisfaction with the MRD services. The study highlighted the factors that influence the level of satisfaction and the quality of service provided by the department.
6. Utilization of Social Media in Healthcare
Farah Hamad Al-Shehaitawi, Dr. Maha Al-Nashmi

BACKGROUND
Social media is broad and constantly evolving. The term generally refers to Internet-based tools that allow individuals and communities to gather and communicate; to share information, ideas, personal messages, images, and other content; and, in some cases, to collaborate with other users in real time.

PURPOSE
Collaboratively solving problems, sharing knowledge, or gathering opinions. Highlight and briefly discuss issue areas within the context of institutional policy and training.

METHOD
I have relied on PubMed and Google Scholar to collect my data.

CONCLUSION
Social media analytics and Big Data are ideas that have been growing in commercial management in recent years. The quality improvement movement in healthcare has often been at its innovative best when adopting ideas from other industries.
3. The Anti-Cancer Effect of Costus on MCF7 Breast Cancer Cells
Fatma Al-Jowhary and Mashael Al-Mutairi PhD
Department of Medical Laboratory Sciences, Allied Health Sciences, Kuwait University, Kuwait.

BACKGROUND
Breast cancer is the most prevalent type of cancer among women, accounting for 25% of all cancer cases and 15% of all cancer deaths among females worldwide. The stage of breast cancer whether being invasive or non-invasive is assessed in the determination of the most appropriate treatment. Costus is a natural sesquiterpene lactone found in plants and is suggested as a potential anticancer due to its ability of arresting the cell cycle and inducing apoptosis. The aim of this study was to investigate the possible anti-cancer effect of Costus on MCF7 breast cancer cells.

METHODS
MCF7 breast cancer cells were grown and maintained on RPMI-164 media. Cells were exposed to increased concentrations of Costus (0.5-10 mg/ml) for 24 or 48 hours. Cell viability, MTT, and Immune-fluorescence staining and western blot were performed.

RESULTS
Treating MCF7 cells with increasing concentrations of Costus for 24 and 48 hours significantly reduces cells' viability and inhibited their proliferation when compared to untreated control. This effect was due to triggering cells apoptosis, which was detected by the increase in P-γ-H2ax phosphorylation nucleus deposition. Also, Costus significantly suppressed the MCF7 cells migratory abilities.

CONCLUSION
The results strongly showed that Costus can exert a potent anti-cancer activity against breast cancer cells and that Costus can potentially be a promising anticancer agent.
7. Evaluation of Skills and Knowledge of Research for Graduates, Undergraduate Students and Staff at Kuwait University

Mariam Al-Mahdi¹, Maha Al-Suwaidan², Ebtisam Al-Rubea³, Maha Al-Nashmi

INTRODUCTION
The process of conducting scientific research needs a knowledgeable and skillful researcher. The researcher should have decent background knowledge about the research topic and good research skills, which can elevate the level of research.

Objective: This study aimed to evaluate both skills and knowledge of Kuwait University graduates, undergraduates, and staff in order to improve the quality of research education.

METHODS
This research study is a descriptive study that was conducted by using a questionnaire as an evaluation tool. The questionnaire consisted of 21 questions divided into three sections: undergraduates, graduates, and staff. A stratified random sampling method was used in the data collection phase, and it took 4 weeks to collect a decent number of participants randomly.

RESULTS
The study was done on 172 participants out of 200, which was the targeted sample size. The data analysis showed that the response rate of the research evaluation tool was 86% and the majority of participants were females. In addition, findings showed that 77.1% of participants did not have any published research yet. The study showed that knowledge between undergraduate and graduate participants varies according to their knowledge background. Furthermore, the skills of data analysis of a limited number of participants were below average.

CONCLUSION
The undergraduates’ knowledge and skills results highlight the importance of improving courses on scientific research by conducting more workshops about how to conduct research hand in hand with the research courses.
8. Student Perceptions of the Professional Practice Experience (PPE) in the Health Informatics and Information Management Education Program
   Abrar AL-Enezi¹, Maali AL-Ajmi², Mariam AL-Mass³,
   Maha AL-Nashmi⁴, Maha Yunis⁵

INTRODUCTION
This study was designed to measure the helpfulness of the professional practice experience (PPE) to a student’s learning process from the perspective of the HIIM students and graduates. The study is concerned with measuring three variables, namely: total content hours in each semester, clinical site chosen for each PPE course and how compatible each PPE is with its corresponding theory course.

METHODS
This study is an exploratory qualitative study. Twenty articles and handbooks were reviewed based on PPE guidelines and focused on 3 variables: curriculum, site, and time with the responding to student perception.

RESULTS
Of 20 articles and handbooks reviewed, 15 met the variables of the study regarding PPE guidelines. The variables are curriculum, site, and time allocated on each PPE semester. On the other hand, 3 articles out of the total articles reviewed studied the relationship between student perceptions and their direct practice experience.

CONCLUSION
Professional Practice Experience (PPE) is important for Health Informatics and Information Management (HIIM) students. The objective of providing a PPE for students as it is considered a required practical course to be conducted in a way that involves the students with the real work environment and requires input from students, who receive a grade and course credit that are mandatory for graduation. The study explored students' perception according to 3 variables: curriculum, site, and time based on the comparison among PPE guidelines between AHIMA and HIIM departments at Kuwait University.
9. Study of Work Satisfaction of Faculty of Allied Health Sciences Graduate Students
Shrouq Kamal, Kawthar Akbar, Soundos Jassim

BACKGROUND
Job satisfaction is used to measure how an employee is content with his job and how satisfied they are in the workplace, work flow and process. Job satisfaction is defined as the psychological responses to one's job and how content an individual is with their job. It is an essential part of ensuring high-quality service and care.

PURPOSE
The main objective of this research was to obtain a comprehensive understanding of what FAHS graduate students at Kuwait University thought about their jobs using a job satisfaction survey. The study aims were:
to explore factors of satisfaction and dissatisfaction of graduates.
to identify work improvement factors.
to realize if HSC graduates use what they were taught at work.

METHOD
This was a cross-sectional and comparative survey targeting FAHS graduates older than 23 years. It included both genders. The study targeted Kuwaiti and Non-Kuwaiti graduates over a period of three weeks. The sample size was 100 graduates from all majors.

The Questions were:
Is FAHS graduates fully satisfied with their work?
Do the years of experience affect their satisfaction level?
Are they using what they have been learned and taught at the FAHS?
Those who refused to consent were excluded from the study.

RESULTS
Private sector respondent was higher than governmental with 53%. Most respondent's years of experience were from 4-1 and less. All occupations have the greatest agreements about their working hours especially OT with 14%.

DISCUSSION
The study shows that OT respondents are the most satisfied with their salary with 10% and HIIM have the most strongly disagree about their satisfaction of salary with 5%. For overall satisfaction, respondents of private hospitals have the greatest agreement about their overall satisfaction with 27% than governmental hospitals with 21%.

CONCLUSION
There are many factors that could impact personal job satisfaction and its advancement. In order to ensure and increase respondents overall job satisfaction, it is crucial to understand their needs and abilities to do the work required from them in an efficient manner.
10. The Impact of Social Media Physicians on People’s Beliefs and Practices
   M.T. Al-Tamimi and Maha Al-Nashmi PhD

BACKGROUND
Many social media tools are available for healthcare professionals, including social networking platforms, blogs, Twitter, Instagram, Facebook, and Snapchat. These tools can be used to enhance a professional’s networking, education, organizational promotion, patient care and education, and public health programs. However, they also present potential risks to patients and HCPS regarding the distribution of poor quality information, damage to professional image, breaches of patient privacy, violation of personal professional boundaries, and licensing or legal issues within the medical community. There is persistent debate as to whether the information available through social media is trustworthy and valid, and whether physicians are ready to adopt these technologies and ultimately embrace them as a format for professional development and lifelong learning. Many healthcare institutions and professional organizations have issued guidelines to prevent these potential risks. The aim of this study is to measure the influence of physicians who use social media on the medical knowledge of the general public, and whether they believe and practice what they read, hear and see from social media doctors.

METHODS
A sample of social media users from HSC students and staff above the age of 21 completed a survey on social media physicians, and an observational study of the comments below the physician’s posts was also conducted.

RESULTS
All 134 respondents reported having accounts on Social Media Applications. Around 92.6% used Snapchat, 91.1% used Instagram, 83.0% twitter, and 39.3% used Facebook. The researchers found that 84.0% of the sample their medical information is affected by what social media physicians present and 55.2% were satisfied with this information.

DISCUSSION
It was found that all people in the sample use social media applications, and for 84%, their medical information is affected by what social media physicians present.

CONCLUSION
Social media physicians have brought about a revolution in the use of social media tools with a consequential impact on people’s understanding of medical information. This can both benefit and harm people depending on the validity of the information that physicians present.
11. An Examination of Variations in the Accreditation Rates of Medical Record Departments
Malak Al-Ghadhoori, Mariam Al-Azmi, and Fatma Dashti

BACKGROUND
One way to improve quality and safety in healthcare organizations is through accreditation. Accreditation is a process of review that allows healthcare organizations to demonstrate their ability to meet regulatory requirements and standards. Health accreditation programs are designed to strengthen quality and safety improvement efforts through compliance with clinical and organizational standards. The aim of this study is to identify the factors that influence the hospital accreditation rates.

METHODS
A qualitative research approach was used through the interview of the heads of the medical record departments (MRD) of four hospitals. These hospitals receive accreditation periodically from a team of experts who evaluate the department based on standardized criteria.

RESULTS
The responses of the heads of the MRDs indicated two main factors affecting accreditation rates, staff and environmental factors. Although accreditation standards require HIM graduates or a Medical Record Diploma, most hospital staff lacked appropriate qualifications. Environmental factors are directly impacted by the policies of the Ministry of Health. Most hospitals suffer from a shortage of resources, including computers, printers, internet servers, secure trollies to carry patient records, and Health Information Systems, some of which currently lack integration within the hospital itself and also with primary clinics. These factors contribute to lower accreditation rates in the hospitals.

CONCLUSION
Accreditation rates vary in MRD due to two main factors, environmental issues determined by the Ministry of health and the level of qualifications of staff. The accreditation process has the potential to influence the quality of care provided in hospitals, though this is dependent on meeting the aforementioned requirements.
12. The Efficiency of Adopting Data Exchange Standards: Application of the Canadian Accreditation Standards (CAS)
Rasha AlHatim, Zainab Altabtabai, and Maha AlNashmi PhD

BACKGROUND
Health is a sensitive sector as it involves people’s lives. Unfortunately, today, many hospitals are considered organizations that deal with patients as customers. Achieving patients’ satisfaction is a universal goal and protecting patients’ information is a part of achieving this goal. Moreover, data exchange and processing information is the backbone of any health organization. Currently, Kuwait Hospitals are applying the Canadian Accreditation Standards (CAS) for data exchange. However, these standards have never been analyzed in terms of their efficiency in Kuwaiti Hospitals.

PURPOSE
To investigate the efficiency of adopting the CAS for data exchange in Kuwait Hospitals.

METHODS
A self-developed quantitative survey was created and distributed among the Health Informatics and Information Management directors, deputy directors and supervisors. Sample of participants were recruited from three selected Hospitals, which are Mubarak Hospital, Amiri Hospital and Al-Sabah Hospital.

RESULTS
Thirty-one participants completed the survey. Thirteen participants were from the Al-Sabah Hospital (41.9%) and 9 from both Al-Amiri and Mubarak Al-Kabeer with score of (29%) for both. Most of the questions and statements on the questionnaire that supported the efficiency of Canadian Accreditation Standards were agreed upon.

DISCUSSION
Results confirmed that (CAS) for data exchange are effective. The questions in the second and third sections were mostly agreed upon. The Accreditation Canada is considered a national vender. Therefore, the results of the statement (Exchange options offered by Venders Service provided by national exchange networks) may not be comparable with the other results.

CONCLUSION
This study is the first of its type that has been conducted in Kuwait. This study indicates that the CAS are effective and meet the needs of data exchange policies that takes place in the department.
13. **Information Technology Decision Making Skills for Hospital Directors**  
   (Information Poster)  
   Sarah Adel Al-Turkomani

The importance of information technology is increasing as more and more health care providers become reliant on technology to help with their day-to-day tasks. This impacts the quality of care given to patients as less time is needed for diagnoses, reporting, communication, research, data storage and retrieval, data analysis, etc., while more time is spent on attending patients and, ultimately, providing better care. As the decision maker in the proper selection and implementation of the most effective and efficient hardware and software, the role of the hospital director is crucial to the success of any IT applications. This pivotal involvement of hospital directors requires them to have a comprehensive knowledge of IT systems and related applications.
14. HIM Profession: Past, Present and Future Vision  (Information Poster)
Muneera AlAjmi, Khadijah AlAdwani, Shaikha AlAmmari, Dr. Maha AlNashmi

The aim of this information poster is to present The Health Information Management (HIM) profession with regard to how it started, how it evolved through the years and what the expectations and development of this profession will be for the future. Health Information Management is basically focused on the medical records that capture a patient’s information and all medical data regarding his/her condition. A patient’s data needs to be collected and retained effectively to provide proper health care decisions, organizational management, clinical research studies and health care policies.

Documenting patients’ health status started with the first medical interaction with a patient, recording his symptoms and complaints in a hand-written format. Through the years, this hand-written format evolved to a physical organized record with a numerical order to be stored in a specialized storing area in each healthcare institute. This handheld physical record developed into the adoption of a completely Electronic Health Record (EHR), with better healthcare and decreased health costs.

The future of the profession will need to include informatics as a part of the technology revolution that this profession is experiencing. Moreover, Health Records Systems are promising to have richer in-depth contents, more precise medicine and more effective COPE, which will help in the clinical decision-making process. Also, the future of EHR systems includes more patient engagement and the possibility for remote medicine.

In Kuwait, Medical Records have existed since the opening of the first governmental hospital, which is AlAmiri Hospital located in Kuwait City, and nowadays many hospitals in Kuwait are in the phase of implementing EHR that provides more accurate and timely access to a patient’s records while preserving privacy and confidentiality rights.
Satisfaction in general can be described as the goodwill of a person. It can be improved by the refinement of sources that reduce people’s satisfaction. This study concentrates on students' satisfaction of their major, which can affect their performance.

The purpose of the research is to examine the 4th year students' satisfaction of their major at the Faculty of Allied Health Sciences (FAHS), Kuwait University and how to improve it. The research topic is important because there has not been any previous research conducted at FAHS about students' satisfaction of their major. It also shows the level of students' satisfaction of their major under three main categories: (1) course satisfaction, (2) environment satisfaction and (3) instructor satisfaction.

The target population of the study was 4th year students at FAHS, with the age range of 21-29 years. Both Kuwaiti and non-Kuwaiti, male and female students were included.
ABSTRACTS

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1. The Effects of Diabetes Mellitus on Blood Platelet Parameters
Shaikha Al-khalaf¹, Mehrez Jadaon²

BACKGROUND
Diabetic Mellitus is known to be associated with different diseases such as cardiovascular diseases, small vessel diseases and renal failure. It causes changes in blood glucose level, which affects many parts and components in the body. It is still not very clear how a high glucose level affects blood platelets, which are responsible for blood clotting. If diabetes mellitus affects platelets, this may be a contributor in the pathophysiology of cardiovascular diseases in diabetes. The aim of this study was to study the effect of diabetes mellitus on platelets by doing a complete blood count to measure the different platelets' parameters in diabetic patients.

METHODS
A total of 63 patients with diabetes mellitus were included in this study, and their age range was 5 to 88 years old. One blood sample was taken from each patient to analyze CBC tests, which include a platelet count, lymphocyte count, lymphocyte %, mean platelets volume MPV, and platelets to lymphocytes ratio PLR.

RESULTS
Only 2 out of 63 DM patients (3.125 %) had PLT count higher than the normal range. For the MPV, 3 patients (4.68 %) had a higher than normal range, while another 3 had lower than the normal range. The lymphocyte count increased in 10 cases (15.625%), while 2 (3.125%) had decreased counts. For the PLR results, 6 patients (9.37 %) had PLR higher than the normal range, while 5 patients (7.81 %) had PLR lower than the normal range. The means of all the parameters were within the reference normal range.

CONCLUSION
The study showed an increase in platelets, lymphocytes, PLR and MPV in some of the diabetic patients. Still, that was not enough to surely correlate this to thrombosis. More studies should be done on more patients with correlation to the clinical data in order to get a better conclusion.
2. Lymphocyte Expression of Intracellular Cytokines and Heat Shock Proteins in Peripheral Blood of Patients with Atopic Dermatitis

Fatma M. Almazruii, Dr. Fadia Mahmoud

This study evaluated CD4+ T cell expression of intracellular Th1, Th2 cytokines and heat shock proteins hemeoxygenase-1 (HO-1) and HSP70 as biomarkers in AD patients to provide a preliminary description of correlations between inflammatory cytokines and heat shock proteins. Peripheral blood mononuclear cells (PBMC) were obtained from 12 AD patients and from 12 age-matched and gender-matched healthy control subjects. PBMC was purified from blood, and each AD patient and control subject were cultured with PMA and ionomycin (PMA/I) to induce expression of pro-inflammatory biomarkers in CD4+ T cells differentiated to express Th1 or Th2 cytokines, such as HO-1 and HSP70. Evaluations were performed using the FC 500 Beckman Coulter flow cytometer. Elevated CD4+ T cell expression of cytokines IL-4, IL-5, IL-10, TNF-α and IFN-α; HO-1 and HSP70 were also observed in cells from blood of AD patients compared to the control subjects. A direct correlation was observed between CD4+ T cells expressing IL-5 and HSP70 (r= 0.516). A correlation was also observed between CD4+ T cells expressing TNF-α and both HO-1 and HSP70 (r= 0.643 and 0.416 for TNF-α and HSP70 respectively); and a direct correlation between CD4+ T cell expressing HO-1 and HSP70 (r= 0.616). Assessment of the significance of differences in the magnitudes of the biomarkers in blood of AD patients compared to control subjects was made using Students t-test and Pearson product analysis test for correlations with a P-value of <0.05, which was considered statistically significant. This study demonstrates that there is an elevated expression of both Th1 and Th2-associated cytokines in CD4+ T cells of AD patients, and that there is a direct correlation between Th1 and Th2 cell populations, suggesting a systemic inflammatory profile. Finally, the increased HO-1 and HSP70 expression represents an adaptive physiologic countermeasure to AD-associated tissue damage from inflammation.
3. The Anti-Cancer Effect of Costus on MCF7 Breast Cancer Cells  
Fatma Al-Jowhary and Mashael Al-Mutairi PhD

BACKGROUND
Breast cancer is the most prevalent type of cancer among women, accounting for 25% of all cancer cases and 15% of all cancer deaths among females worldwide. The stage of breast cancer whether being invasive or non-invasive is assessed in the determination of the most appropriate treatment. Costus is a natural sesquiterpene lactone found in plants and is suggested as a potential anticancer due to its ability of arresting the cell cycle and inducing apoptosis. The aim of this study was to investigate the possible anti-cancer effect of Costus on MCF7 breast cancer cells.

METHODS
MCF7 breast cancer cells were grown and maintained on RPMI-164 media. Cells were exposed to increased concentrations of Costus (0.5-10 mg/ml) for 24 or 48 hours. Cell viability, MTT, and Immune-fluorescence staining and western blot were performed.

RESULTS
Treating MCF7 cells with increasing concentrations of Costus for 24 and 48 hours significantly reduces cells' viability and inhibited their proliferation when compared to untreated control. This effect was due to triggering cells apoptosis, which was detected by the increase in P-γ-H2ax phosphorylation nucleus deposition. Also, Costus significantly suppressed the MCF7 cells migratory abilities.

CONCLUSION
The results strongly showed that Costus can exert a potent anti-cancer activity against breast cancer cells and that Costus can potentially be a promising anticancer agent.
4. The Role of Cytokeratin 19 And Cytokeratin 7 in The Differential Diagnosis of True Papillary Carcinoma of Thyroid and Papillary Carcinoma-Like Changes in Hashimoto's Thyroiditis

Batool Faisal and Dr. Anwar AlAwadhi

BACKGROUND:
Recently, an obvious increase in the incidence of Papillary thyroid carcinoma (PTC) has occurred. Cancer registry data obtained from the Kuwait Cancer Registry at Kuwait Cancer Control Centre (KCCC) of the Ministry of Health showed that 118 women have been diagnosed with thyroid cancer compared to 30 men. Nearly, 50 percent of citizens with this type of cancer are below 40 compared to 49 percent of their expatriate equivalents. The pathological diagnosis of PTC by immunohistochemistry is usually an easy diagnosis in the majority of cases. However, differentiating benign and malignant lesions from each other can be challenging.

AIM:
The purpose of this study is to evaluate the localization and intensity of immunohistochemical expressions of cytokeratin 7 and cytokeratin 19 antibodies in PTC and benign thyroid nodular lesions and their contributions to differential diagnosis.

METHODS:
A total of Twenty-three thyroid tissue samples were included in the study and all were stained for antibodies against cytokeratin 7 and cytokeratin 19. Eighteen from each benign thyroid disorder (Hashimoto's thyroiditis, Multinodular Goiter) and five papillary carcinoma samples were processed and stained using immunohistochemistry.

RESULTS:
The expression of CK7 and CK19 was diffused and strong within all thyrocytes in all cases of PTC and weak, absent expression in non PTC lesions as HT and MNG respectively.

DISCUSSION & CONCLUSION:
This study supports the use of CK 7 and CK 19 in the detection of PTC since the Expression of CK 7 and CK19 is significantly higher in cases of PTC compared to normal tissue and benign thyroid lesions. However, It’s recommended that Pathologists include the CK 19 marker in their routine thyroid diagnosis reporting protocol to get more accurate results than CK 7.
5. New Biomarker Needed for Fe Deficiency Anemia Follow up in CKD Patients  
Ali Al-Nasser¹, Suad Al-Fadhli, PhD

INTRODUCTION  
Iron supplementation is widely used in chronic kidney disease (CKD) patients to treat iron deficiency. The aim of this study was to investigate the iron response in different stages of non-dialysis CKD after the medication.

METHODS  
Data were collected and extracted for 83 CKD patients referred from Mubarak Al-Kabeer nephrology department with various CKD stages (1-5) and underwent a Ferrosac Injection (1000mg) as an iron treatment. All cases had iron deficiency anemia before the treatment. The extracted data included all kidney, iron profile and total blood cell count (CBC). The age range for this cohort was 13-85 years of both genders male (57%) and female (43%). SPSS 23 was used for statistical analyses.

RESULTS  
Using eGFR level to categorize the different stages of CKD and compare it to the various Fe profile showed that serum Fe was 33%, 46%, 63%, 53%, 75% below the healthy range inspite of receiving the Fe supplement in the CKD stages 1,2,3,4,5 respectively. Also, haemoglobin was not corrected, and it was 83%, 41%, 85%, 86% & 87% below the healthy range for stages 1-5 respectively.

DISCUSSION & CONCLUSION  
The study highlights the high prevalence of iron deficiency in CKD patients receiving iron treatment. Treatment with a ferrosac injection resulted in an improvement in the serum Fe and Hb level in all stages of CKD. However, it did not illuminate Fe deficiency anemia. It could be that serum iron should not be used as an exclusive biomarker to follow up Fe deficiency anemia in CKD patients, and a new biomarker should be investigated.
6. Evaluation of D-Dimer Levels in Sickle Cell Anemia Patients in Kuwait

Fatma AlBatni and Anwar Al-Awadhi PhD

BACKGROUND
Sickle cell anemia is a genetic disorder that is caused by a mutation in hemoglobin molecule. The mutation is caused by switching between glutamic acid and valine in the sixth position from the NH2-terimal end of the β chain, resulting in the formation of an abnormal form of hemoglobin called Hemoglobin S. One of the complications of sickle cell anemia patients is seen in the coagulation system that is presented by hypercoagulability due to blockage in small blood vessels and hemolysis and inflammatory reaction, resulting in an increased expression of tissue factor level and the activation of coagulation.

PURPOSE
In this study, we aim to assess fibrinolysis in sickle cell anemia patients by measuring D-dimer levels and comparing it to normal controls.

METHODS
The sample population in this study included 25 normal controls: 21-55 years and 25 sickle cell anemia patients aged 19 to 55. Two samples were collected from each subject: one in EDTA tube for a complete blood count (CBC) and one in a sodium citrate tube for the analysis of Activated Partial Thromboplastin Time (APTT), Prothrombin Time (PT) and D-dimer levels. The D-dimer analysis was done using the latex agglutination method.

RESULTS
Sickle cell anemia patients presented with clear evidence of haemolysis as they had lower red blood cells and hemoglobin levels when compared to normal controls (p<0.001) and higher reticulocytes count (p<0.001). In normal controls, 24% (6 out of 25) of the subjects were positive for the presence of D-dimer while 64% (16 out of 25) of SCA patients were positive.

CONCLUSION
SCA patients presented with increased levels of D-dimer compared to normal controls, which indicates hypercoagulability and increased fibrinolysis.
7. Detection of Bacteria and Antibiotic Resistance in Used Books
Moddy AlRoomy and Leila Vali PhD

INTRODUCTION
Since 1879, there have been concerns with the spread of infectious diseases by books as vectors and some hygienic self-imposed rules were established to minimize readers’ exposure to bacteria. In this study, used books were investigated for bacterial contamination and their resistance to antibiotics.

METHODS
Twenty samples were collected from different books in libraries using sterile swabs. The samples were cultured on blood, MacConkey and mannitol salt agar plates. Bacteria were identified using Gram stain and biochemical tests such as: catalase, coagulase, DNase, motility and API. Antibiotic sensitivity testing was performed using disk diffusion method, and MIC of some antibiotics were determined by agar dilution technique. PCR was performed to test if the bacteria contained any of the resistance genes associated with their resistance pattern.

RESULTS
Thirty-two bacteria were isolated from used books, (90.6%) and (9.3%) were gram positive and gram-negative respectively. 9.37% were *Staphylococcus epidermidis*, 37.5% were *Staphylococcus aureus* and motile *Bacillus subtilis* 43.75%, whereas gram negative bacteria included *Acinetobacter* 6.25% and only 3.1% of *Enterobacter agglomerans*. Three samples of *Bacillus subtilis* showed intermediate resistance to clindamycin, two to ceftriaxone and to ampicillin (MIC=10mg/ml) and tetracycline. *Staphylococcus spp.* had intermediate resistance to chloramphenicol. Moreover, *Enterobacter* showed an intermediate resistance to cefoxitin and chloramphenicol. None of the PCR products contained the resistance genes tested.

DISCUSSION & CONCLUSION
It was illustrated that books may be carriers of skin normal flora or environmental bacteria, and direct contact is generally harmless. However, it is possible that on rare occasions antibiotic resistant strains may cause infections in immunocompromised patients.
8. Hepatic Acetaminophen Toxicity and Its Reversal Using Barley Water
Hanadi Al-Muzayen¹, Chacko Mathew

INTRODUCTION
Acetaminophen (paracetamol) is an analgesic drug. It is safe but causes fatal hepatic necrosis and hepatic damage in overdose. On the other hand, barley water is shown to have some protective effect on the liver. This study focused on paracetamol induced hepatic pathology in adult Wister rats and the changes that occur following barley water treatment.

METHODS
Wister male rats with an average weight of 190 grams were used in this study. The animals were divided into four groups. They are, Paracetamol, Paracetamol and barley, Barley control and Water control groups. Paracetamol, Paracetamol and barley groups were given paracetamol (2mg/g body weight) in drinking water for 5 days. The paracetamol group received only water for another 8 days while the Paracetamol and barley water group received 1% barley water instead of water. The barley control and water control groups received barley water and water respectively during the experimental period. At the end of the experiment, the animals were sacrificed and the hepatic tissues were removed and studied by H&E staining method and special staining methods.

RESULTS
Light microscopic analysis using H&E showed degenerative changes in paracetamol group due to acetaminophen toxicity. Furthermore, there was a decrease in hepatic glycogen deposit in Paracetamol group as compared to Paracetamol and barley group. These paracetamol induced pathological changes were partially reversed following oral administration of barley water in Paracetamol and barley group rats. No remarkable changes were observed in the level of collagen and reticulin in the experimental group as compared to the control groups.

DISCUSSION & CONCLUSION
This study shows that the hepatotoxic effects of paracetamol are partially reversed by barley water.
9. New-born Screening of Inborn Errors of Metabolism in Kuwait
Sarah Adel Al-Kandari, Dr. Fawziah Mohammed Al-Kandari

INTRODUCTION
Inborn errors of metabolism (IEM) are a heterogeneous group of diseases that affect the metabolic pathways. It is caused by a mutant gene that produces abnormal protein. These diseases lead to some serious and fatal symptoms in the affected individual, but most of these disorders can be treatable. Therefore, a screening test is a must. **Aim:** to know the neonatal screen program of inborn errors of metabolism in Kuwait and to know the biochemical tests used in the newborn screening (NBS), such as Dissociation Enhanced Lanthanide Fluorescence Immune Assay (DELFIA) and Tandem mass (MSMS).

METHODS
Blood samples were collected between 48 to 72 hours after birth from the heels of newborn babies then spotted on filter card and dried. A total of 776 samples were analyzed by DELFIA and MSMS assay testing for approximately 22 inborn errors of metabolism.

RESULTS
Forty-two screens positive (abnormal results) markers specific for selected IEMs were detected. Twenty-two screen positive results were detected by DELFIA and 20 screen positive results were detected by MSMS.

CONCLUSION
In the present study, the NBS analysis study revealed 734 (95%) of tested samples were screen negative and 42 (5%) samples were screen positive for 11 different metabolites. Out of the 11 abnormal metabolites detected, 17-OH was the highest (21%) and the C5DC metabolites was the lowest (2%). These positive NBS results do not mean that the infant has a disease; however, they do mean that the infant has an increased chance to have a disease. Therefore, confirmatory disease specific tests for each metabolite are required to rule out false positive cases. NBS has provided a model of a successful public health screening program that tests infants shortly after birth for conditions that can cause disability or death if left undetected and untreated.
10. Gender and Age variation in Food Intolerance Based on Food Specific IgG  
Ebrahim AlMutairi, Dr.Suad AlFadhli

BACKGROUND:  
Food specific serum IgG has been used as an indicator for food intolerance and for various gastrointestinal symptoms. This is the first study in Kuwait to analyze food-specific IgG in subjects with clinical signs and symptoms of allergy with no clear laboratory indication of allergy.

METHODS:  
Fifty serum samples (age range (3-80yr)) were analysed in Al-Jarrallah German specialized laboratory (64% female and 36% males) for subjects with clinical signs and symptoms of allergy with no clear laboratory indication of allergy. These subjects have symptoms known to cause food intolerance. A quantitative assay (Foodprint™ microarray 200+food IgG kit) was used for investigating IgG-mediated food sensitivity for 222 food substances. SPSS was used for statistical analysis.

RESULTS:  
In the tested cohort, the most prevalent food substance intolerance was found for pea (66%), barley (62%), cola nut (58%), milk (cow) (56%), yeast brewers (52%), wheat (50%) and egg white (46%). No difference was found in terms of quantitative IgG reaction in both males and females (51.7IU) and (51.9IU) respectively. However, males showed intolerance to more food subjects (159 food substance, 72%) than females (125 food substance, 56%). Younger population (<35yrs) showed food intolerance to more food substances than older population (>35yrs).

DISCUSSION & CONCLUSION:  
The variation between male and females in term of the number and type of food substance intolerance might be due to immunological responses present in females more than males. It could also be due to anatomical differences in males and females as gut permeability might be strongly involved. In conclusion, IgG food intolerance test could be used as a valid and essential test to assess cases with signs and symptoms of allergy with no clear laboratory indication of allergy. The mechanism of food intolerance needs further research to have a comprehensive view on this subject matter.
11. Identification of The Types of Pre-Analytical Errors in Biochemistry Laboratory in Adan Hospital; A One Year Study
   Al-Mohammed A¹, Dr. Mashael Al-Mutairi¹

INTRODUCTION
Laboratory errors are defined as defects that occur during an entire testing process. In general, a laboratory testing process is subdivided into pre-analytical, analytical, and post-analytical phases. The effect of the pre-analytical error is a significant issue that requires paying attention to because 70-85% of clinical decisions are based upon the laboratory test results. Therefore, clinical laboratory errors directly lead to increased healthcare costs, decreased patient satisfaction, and it affects the hospital’s efficiency and credibility.

METHODS
The data were collected from the rejection log book of biochemistry laboratory and Laboratory Information System (LIS) of Adan hospital for 2017. A total of 882,313 samples were collected from in-patients and 119,269 samples were collected from the out-patient department.

RESULTS
Out of the 1,001,582 tubes received during the data collection period (2017), the most common causes of rejection were; hemolyzed samples 0.16%, insufficient sample volume 0.03%, and samples labelled as others 0.01%. On the other hand, the total error rate for out-patient was 0.22%.

CONCLUSION
The rate of total pre-analytical errors during 2017 was 0.22%, where the highest rate of rejected specimens was because of hemolyzed samples.
12. Prevalence and Risk Factors of Bacterial Contamination in Environmental Inanimate Objects

Hanoof Alkhaldi and Sherief El-Shazly PhD

BACKGROUND
Security checkpoints are crowded places acting as a transit area where people pass by. Each checkpoint has its own inanimate objects that could be a potentially hazardous reservoir for pathogenic bacteria, and people who are passing these points could either catch an infection or transmit one.

Aim: This study was conducted to discover whether the inanimate objects could be a reservoir of pathogenic bacteria.

METHOD
Swab samples were collected from 6 different security checkpoints, and then analyzed using standard microbiological methods. Microbiological culture was performed on different media, followed by Gram staining of the bacterial isolates. Biochemical tests were done for full identification of the bacterial isolates followed by antibiotic susceptibility tests.

RESULTS
Our study has shown growth of different types of bacteria on different media. Bacillus species represent 67.7% of the total isolated bacteria at all sites. On the other hand, other pathogenic and nonpathogenic bacteria were also isolated: 8% Enterococcus agglomerans, 4% Klebsiella spp, 3% Chrysoemonas luteola, 3% Micrococcus, 3% Coagulase positive staphylococci, 3% Serratia ficaria, and 1% was the growth of number of strains including Psuedomonas aeruginosa, Escherichia Vulneris, Shigiella, Staphylococcus hominis, Staphylococcus hemolyticus, Coagulase negative Staphylococci, Enterobacter cloacae, Staphylococcus simulans, and Staphylococcus aureus.

DISCUSSION AND CONCLUSION
Inanimate objects play a vital role in hosting and transmitting infections. Gram positive motile Bacillus species was dominant in this study beside other less prevalent bacteria. The widespread of Bacillus species could be due to its normal presence in nature or the transmission from humans to inanimate objects. On the other hand, the presence of the less prevalent pathogenic and nonpathogenic bacteria could be due to their transmission from persons to inanimate objects. A great care must be given to inanimate objects at such sites.
13. The Effect of barley water on the paracetamol induced renal toxicity in rats
Abeer Abdulaziz and T.C Mathew

BACKGROUND
Acetaminophen, also known as paracetamol, is extensively used without medical prescription. It is dangerous when taken at high doses as it causes many complications to various organs, especially to the kidney, which could lead to nephrotoxicity and renal failure.

PURPOSE
This study focused on the effect of barley water in reversing paracetamol induced pathological changes in the rats’ kidneys.

METHODS
Wistar rats weighting approximately 190 grams were divided into four groups. They are paracetamol group, paracetamol and barley group, barley control group and Water control group. The paracetamol group and paracetamol and barley group were given paracetamol (2mg/g body weight) in drinking water for 5 days. The paracetamol group received only water for another 8 days while the paracetamol and barley water group received 1% barley water instead of water. The barley control and water control group received barley water and water respectively during the experimental period. Eventually, the animals were sacrificed and the renal tissues were removed and stained by H&E and special staining method for collagen, and basement membrane.

RESULTS
Light microscopic studies using H&E stain showed degenerative changes in the kidney of the paracetamol group as well as mesangial cell proliferation. Furthermore, in the paracetamol group as compared to Paracetamol and barley group, there was an increase in the thickness of basement membrane, which was measured by using periodic acid Schiff's staining method. These paracetamols induced toxic changes were partially reversed following the oral administration of barley water.

DISCUSSION &CONCLUSION
The data presented in this study showed that the renal toxic effects of paracetamol can be partially reversed by consuming barley water.
14. Effects of Hydroxyurea Treatment on Complete Blood Count and Hemoglobin Levels in Sickle Cell Anemia Patients
Dr. Anwar Al-Awadhi, Hajer Al-Shammeri (Al-Shammeri)¹

INTRODUCTION
Sickle cell disease is a hereditary disorder in which the abnormal hemoglobin S is present in the red blood cell. Hemoglobin S makes red blood cells sickle and unable to transport oxygen throughout the body. Hydroxyurea is a treatment of choice for those patients as it increases fetal hemoglobin and reduces Hemoglobin S levels in blood, which improves oxygenation. In this study, we aim to evaluate the effect of hydroxyurea therapy on complete blood count and hemoglobin levels in sickle cell patients of our local population.

METHODS
Two blood samples were collected from the sample population, which includes 38 Kuwaiti sickle cell patients of which 20 patients (13 males and 8 females) were on hydroxyurea, and 18 patients (11 males and 7 females) were not taking hydroxyurea. Samples were analyzed within four hours of blood collection for complete blood count and analysis of different hemoglobin levels using high pressure liquid chromatography technique. Data were taken from a previously approved study.

RESULTS
Patients on Hydroxyurea showed increased mean corpuscular volume and mean corpuscular hemoglobin levels compared to untreated patients (p=0.016 and p=0.003 respectively), while Hemoglobin A2 levels were lower in treated patients (p=0.009). Hemoglobin F was increased in treated patients, but the result was not significant (p=0.058).

CONCLUSION
Hydroxyurea showed beneficial effects on sickle cell disease patients. The increase in red blood cell size, hemoglobin level, and hemoglobin F improves overall oxygenation and may lessen clinical presentation in these patients. Replicating this work with a larger sample size is recommended.
15. The Effect of Nigella Sativa on HLA Expression in Whole Blood
Hanadi AlQahtani, Fatema Habeeb

INTRODUCTION
Nigella sativa is commonly called black seeds or (Habbatul Barakah). It is considered one of the medical herbs that have been traditionally used to treat different illnesses, such as asthma, cough, and inflammation. N. sativa has an immunomodulatory property that leads to activating lymphocytes. Many studies have suggested that N. sativa might have an influence on the host's immune system by affecting different cell lines and pathways to fight different diseases such as cancer.

Aim
In this study, we investigated the effect of both oil and boiled N. sativa on the expression of HLA-DR 1 in whole blood.

METHODS
80 mg N. sativa was crushed and boiled in 10 ml of distilled water for 5 minutes. The boiled N. sativa was allowed to cool down to 37ºC before adding it to the blood. Boiled N. sativa was diluted to final dilution 1:2 in whole blood. A sample with normal saline was used as control. The samples were incubated at 37 ºC, 5% CO2 for 21 hours. After that, a viability test was done by using a hemocytometer to count and measure the cells. The viability test was done by using a trypan blue dye exclusion. Flowcytometry analysis was also conducted using FITC labelled HLA.

RESULTS
The results showed that the boiled oil and oil of N. sativa have no toxic effect on human leukocytes viability > 90%. Also, the boiled N. sativa significantly increased the expression of HLA-DR 1 on lymphocytes in whole blood (P ≤ 0.001). In contrast, the N. sativa oil showed a significant effect on the expression of HLA-DR 1.

DISCUSSION & CONCLUSION
N. sativa is nontoxic to normal human blood. The boiled N. sativa, but not the oil, might modulate the expression of HLA-DR1, and enhance the antigen presentation for cytotoxic and helper T-cells. However, this issue should be further investigated.
16. Blood Components Production in Kuwait  
   Estabraq Hussain, Dr Reem Ameen

INTRODUCTION
Blood is the vital fluid that circulates around the human body through the veins, arteries, capillaries, and mainly the heart. Blood consists of cells and plasma. These cells are red blood cells, white blood cells, and platelets. Blood donation is the only method providing this vital fluid and its components since no alternative methods were discovered, and this is where the blood bank role comes. The blood bank issues the different blood components according to the hospitals need and according to the patient’s condition and status.

METHODS
The data was used from Blood Transfusion Administration Services Annual Reports from 1989 to 2016, without the year 1995 for which the annual report was not available, and the year 1990 in which the Kuwait invasion took place. As a result, no data was documented. The available data was programmed using Microsoft Excel tables, and they were simplified and demonstrated with a number of graphs.

RESULTS
The graphs showed a steady increase over years in different blood components donated, prepared, and issued units.

CONCLUSION
The data that was gathered from the annual reports showed a continuous increase matching the population increase and the demand required by both private and governmental hospitals.
17. The Effect of Drinking Coffee on Platelets Parameters
Shefa'a Alenzi, Mehrez Jadaon

INTRODUCTION
Coffee may be the most common beverage in the world. Many people consider it as a risk factor for many diseases based on many studies that were done to determine the relationship between drinking coffee and different diseases.
Aim: The aim of this study was to reveal the effect of drinking coffee on platelets' (plts) parameters, which may be of importance in diseases involving the blood clotting process such as cardiovascular diseases.

METHODS
The study included twenty volunteers (10 drinking coffee volunteers and 10 non-drinking coffee volunteers), aged between 20-60 years. One blood sample was taken from each volunteer to test for CBC, and plts parameters were determined: plts count, mean plts volume (MPV), and plts to lymphocyte ratio (PLR).

RESULTS
Plts count was normal in the two groups studied. However, MPV was higher than normal in only three drinking coffee volunteers, and it was normal in the rest and in the non-drinking coffee group. PLR was low in two drinking coffee results but high in two non-drinking coffee results. The means of plts count and PLR were higher in non-drinking coffee group but the mean of MPV was slightly higher in drinking coffee group. Still, these means remained within the normal ranges for each parameter. Student t-test gave p-values that showed no significant differences in plts parameters between these two groups.

CONCLUSION
Coffee did not have a significant effect on plts parameters. However, this study was conducted on a small number of cases due to short time limit, and it is recommended to do the study again on a bigger number of cases to get confirmed results.
18. Immunohistochemical Detection of Cytomegalovirus and Cellular Changes in Active Inflammatory Bowel Disease in Kuwait
Rawan Esmaiel and Anwar AlBannaw

INTRODUCTION
Inflammatory Bowel Disease (IBD) is an idiopathic chronic inflammation in the gastrointestinal tract that is divided into Crohn’s disease (CD) and ulcerative colitis (UC). CD occurs due to a dysregulated proinflammatory response to commensal gut bacteria or due to mutations. Symptoms are abdominal cramps and diarrhea, both of which can be affected by diet. Corticosteroids are currently the preferred choice for many clinicians, which can be used to reduce the inflammation but not cure the condition. On the other hand, UC, which causes chronic inflammation and drives carcinogenic pathways, increases the risk of developing cancer. Antibodies propagate and alter the immune response. Common symptoms include continuous diarrhea with possible abdominal cramps. Cytomegalovirus (CMV) can cause severe illness, affecting multiple organs including the gastrointestinal tract. **Aim:** This study evaluated the prevalence and outcome of the cytomegalovirus infection in patients with IBD.

METHODS
Fifteen patients diagnosed with CD and five with UC were studied. An immunohistochemistry (IHC) stain was performed using anti-CMV, CD99, Ki67 and p-53 antibodies.

RESULTS
All of the samples were negative for the CMV antibody. One ulcerative colitis patient showed positive p53 expression and another patient’s expression was weak. Two samples of Crohn's disease patients showed a weak p53 reaction. Three out of five UC samples showed a strong Ki67 expression with more than 90%, two showed 70%. Four CD patients had more than 90% Ki67 expression, one patient had 70%, four were 45% and one sample had 20%. Fifty percent had strong positive UC, and 50% had negative CD.

DISCUSSION & CONCLUSION
IBD disorders have increased in the previous decade. However, the aetiology remains unclear as there is not a clear difference between CD and UC. The current investigation tested only fifteen samples of active IBD. This number needs to be increased and involve active conditions for the purpose of comparison. CD99 showed high inflammatory activity in the mucosa of the tissue. CD99 showed high inflammatory activity in the mucosa of the tissue. Ki67 showed higher regenerative activity in UC compared to CD. This pattern needs further investigation and comparison with patient history and other conditions.
INTRODUCTION
Exosomes are miniature extracellular vesicles. The scientific description of exosomes was first reported and published by Pan and John Stone. Exosomes are released by the cell either upon the fusion of an intermediate endocytic compartment with a plasma membrane or directly by the cell membrane. Body cells that secrete exosomes into the ECF involve blood plasma, urine, lymph, cerebrospinal fluid, amniotic-fluid, and many others. Exosomes were implicated in cell to cell communication and transmission of disease states and explored as a means of drug discovery. However, they are not yet fully understood.

METHODS
The western blot characterization method was used to characterize exosomes, whereby the exosomes cells were first extracted from the HEK293 cell, purified and detected. The identification of these vesicles was done by detecting the presence of the CD-36 antibody and the absence of the GRP-94 protein in the purified extracted sample tested, the unpurified sample, and HEK293 lysate and HepG2 lysate lines.

RESULTS
After fully completing the procedure, CD-36 was present, while GRP-94 was absent in the extracted sample.

CONCLUSION
The presence of CD36 and the default absence of GRP-94 strongly indicate that the present particles and vesicles are exosomes and not any other protein vesicles. The single most important drawback is understanding the biological significance of these structures. This may be because it is difficult to understand how exosomes are implicated in the pathogenesis of so many disparate disease states with so little known about their basic physiological functions. There are still many fundamental questions regarding the generation, fate, and normal function of exosomes. Ultimately, one must first understand ILVs, which are more often overlooked, in order to understand exosomes. To avoid confusion and encourage scepticism, it is critical that studies and publications on exosomes provide a precise and explicit account of the criteria used to distinguish them from other extracellular vesicles.
INTRODUCTION
Psoriasis is a chronic autoimmune skin disorder that is caused by an impaired homeostasis mechanism between infiltrating immune cells and keratinocytes. Approximately 2–4% of the general population suffers from psoriasis (Lee et al., 2017). Psoriasis was believed to be a disease primarily associated with epidermal keratinocyte proliferation (Lowes et al., 2014). There are different causes that lead to psoriasis. These causes can be categorised into genetic and environmental factors.

METHODS
Data was collected from psoriasis patients above 20 years old in the Abdulkharim AL Saeed Center in Abdullah Al-Sabah. Ethical approval was granted from the HSC Ethics Committee for Student Research at Kuwait University and the Kuwait Ministry of Health. Data was collected from archived files from the physician responsible. The total analysed sample size in this study was 30 patients with psoriasis. Data was collected anonymously from both male and female patients. The collected data included gender, age and the patient’s diagnosis. Data analysis was performed using Microsoft Excel. The control group consisted of 10 healthy samples from a healthy individual, and it was compared with the psoriasis patients. Statistical analysis was performed using GraphPad Software. The statistical analysis test was an unpaired student t-test.

RESULTS
The count of neutrophils, platelets, and monocytes is significant for psoriasis patients and the percentage decreased through disease complication. Other blood components, WBC, RBC, basophile, eosinophil, and lymphocyte, had an insignificant relationship with the psoriatic patients.

CONCLUSION
The results of this study confirm that blood components effect psoriasis.
21. Microbial Contaminations in Restrooms
Shoug Al-Hazzaa and Sherief El-Shazly PhD

INTRODUCTION
There is widespread contamination and the presence of infectious diseases in public and private restrooms, which impacts upon people’s health in the community. Caution should be taken when using public restrooms.

METHODS
Fifty-two swab samples were collected from different areas of 14 restrooms. These areas included sinks, toilets seats, doorknobs, and flush arms. Standard microbiology laboratory identification procedures were followed to identify the type of bacteria by using biochemical tests.

RESULTS
The presence of both pathogenic and non-pathogenic bacteria was found in many of the bacterial growths, but mostly the skin’s normal flora showed the growths. The percentage of pathogenic and non-pathogenic bacteria growth was differentiated based on the collection areas. The non-pathogenic bacteria dominated the percentage with over 70% of the total.

CONCLUSION
The bacterial isolates revealed in this study indicated the presence of many different types of bacteria on every swabbed surface area. This makes it definitive that the restrooms are contaminated, but the type of contamination was not indicated in previous studies. This is due to a number of different reasons, including the size of the population, traditional personal hygiene habits, and the locations where the restroom samples were collected.
22. Lymphocyte Expression of Intracellular Cytokines and Hemeoxygenase-1 in Recurrent Pregnancy Loss

Sara Aljeraiwi and Fadia Mahmoud PhD

INTRODUCTION
Previous studies have found that high levels of T helper 1 are associated with miscarriage, while high levels of T helper 2 contribute to a full-term pregnancy. The heat shock protein hemeoxygenase-1 plays a role in the pathogenesis of several immune-mediated inflammatory diseases. The present study evaluated CD4+ T cell expression of intracellular Th1 cytokines (TNF-α and IFN-γ), Th2 cytokine (IL-10), and HO-1 to provide a preliminary description of correlations between inflammatory cytokines and HO-1 in patients with a history of RPL.

METHODS
The study included 24 subjects: 12 patients with recurrent pregnancy loss (RPL) and 12 age-matched control subjects. Human peripheral blood mononuclear cells (PBMC) purified from the blood of each participant were cultured with PMA and ionomycin (PMA/I) to induce expression of cytokines in CD4+ T cells differentiated to express Th1 or Th2 cytokines and HO-1. Evaluations were performed using a FC500BeckmanCoulterflow cytometer.

RESULTS
RPL patients exhibited higher levels of expression of the Th1 cytokines TNF-α+ and IFN-γ (p= 0.032 and 0.01 respectively) and lower levels of expression of the Th2 cytokine IL-10 (p= 0.01). In comparison to healthy human control subjects, RPL patients exhibited lower levels of expression of HO-1 in their CD4+ T cells (p= 0.009). An inverse correlation was observed between CD4+ T cells expressing TNF-α and both IL-10 (r= -0.522, p= 0.01), and HO-1 (r=-616, p= 0.009) respectively.

DISCUSSION & CONCLUSION
The present study demonstrated that the elevated expressions of Th1 and reduced Th2 suggest a systemic inflammation profile. The inverse correlation between TNF-α and the cytoprotective heat shock protein HO-1 as well as the anti-inflammatory cytokine IL-10 suggests that there is an induction of HO-1, and consequently, IL-10 may provide a therapeutic approach for the management of RPL.
INTRODUCTION
A person wonders if when they go shopping at a mall or a supermarket, they are also shopping for bacterial contamination. If a person stops and thinks for a while about the number of people who touch escalator handrails, they will be surprised with the amount of microorganisms present. Every day, people ride escalators holding the handrails, which transmits many microorganisms, potentially causing infection.

METHODS
About 30 samples were cultured in blood agar, MacConkey agar, and Mannitol salt agar. Then, the bacteria were identified by performing Gram stain and biochemical tests, which were Catalase test, Coagulase test, Motility test and API™ 20E.

RESULTS
About 30 samples were collected from escalator handrails at different times. After initial inoculation 18 samples (60%) showed visible growth on culture media. Around 44.4% (8 samples) were gram positive bacilli and one sample (5.5%) was gram negative bacilli.

DISCUSSION & CONCLUSION
Handrails assist escalator riders to remain balanced, but they are also collect microorganisms. The environmental samples were collected at different times. Most of the morning samples had no growth, which indicated that the escalators were cleaned efficiently early morning. On the other hand, there were some samples of Staphylococcus coagulase negative growth, which are part of the normal flora of the skin. This study identified microbiological contamination on escalator handrails in malls and supermarkets in Kuwait. To keep bacterial load under control, awareness of personal hygiene and the frequent cleaning of escalator handrails are recommended to maintain people’s health.
24. Growth of bacteria on the toothbrushes with caps
Nourah Al-Mutairi and Ahmad Al-Hasan

INTRODUCTION
The toothbrush is an oral hygiene instrument used to clean the teeth, gums, and tongue. There are two types of toothbrushes, hard and soft. Most dentists recommend the use of a soft toothbrush since hard bristled toothbrushes can damage gum tissue, especially around the gum line. Toothbrushes can become contaminated from the oral cavity, environment, hands, aerosols, and storage containers. Bacteria that attach to, accumulate, and survive on toothbrushes may be transmitted to the individual, causing diseases. There are typically over 70 different types of bacteria in the mouth and most of them occur naturally and are harmless. However, there are bacteria that can contribute to dental decay and periodontal (gum) disease in particular.

METHODS
The study involved 10 sampled toothbrushes with a cap and 10 without a cap. In total, 20 samples of toothbrushes were taken from the researcher’s family aged 18 to 45 years both males and females, and children aged from 5 to 10 years. The samples were identified using several microbiology techniques, including different media, Gram stain, Catalase test, and API testing.

RESULTS
Results showed that the growth of bacteria on the toothbrushes with caps was greater than on those without a cap. The most common type of bacteria was Bacillus, which was found on toothbrushes with a cap.

CONCLUSION
Bacteria seem to grow more on toothbrushes with a cap than without a cap. This may be due to the moist environment, which helps bacteria grow. In contrast, usage of a toothbrush without a cap for under 2 months showed less bacterial growth. According to this data, it is advisable to replace toothbrushes at least every couple of months to avoid growth of bacteria. It is also not advisable to share a toothbrush. The benefit of covering the toothbrush with a cap is that if there is more than one toothbrush being stored in close proximity, the cap helps prevent the toothbrushes from touching and transferring any bacteria. In order to prevent bacterial growth on toothbrushes with a cap, it is advisable to dry the brush before replacing the cap.
25. Association of Vitamin $B_{12}$ Deficiency with Diabetes Mellitus
Shahad Al-Shammari and Mehrez Jadaon PhD

INTRODUCTION
Type 2 diabetes mellitus (T2DM) is a common condition that causes various consequences. Various studies reported vitamin $B_{12}$ deficiency in T2DM, and this may result from the oral anti-glycemic drug metformin. This deficiency may affect the nerves and neurons, as well as several blood components, leading to megaloblastic anemia.
Aim: to study any possible decrease in the vitamin $B_{12}$ level in T2DM patients who are on metformin treatment.

METHODS
The study was done on 13 T2DM Kuwaiti patients aged between 20 and 84 years. They were 6 males and 7 females. All patients were taking metformin as a treatment for their condition. CBC and vitamin $B_{12}$ tests were done for each subject and the results were compared to the normal ranges of vitamin $B_{12}$ and RBC parameters.

RESULTS
Four of six males and four of seven females had low levels of vitamin $B_{12}$. It was noticed that all patients with low levels of vitamin $B_{12}$ had decreased levels of RBC count, HB, HCT, with an increased MCV and normal MCH and MCHC.

CONCLUSION
The results showed that there was a decrease in vitamin $B_{12}$ levels in about two-thirds of the 2DM patients who were on metformin treatment. Also, these low levels of vitamin $B_{12}$ affected RBC parameters, causing megaloblastic anemia. This indicates that metformin may cause vitamin $B_{12}$ deficiency in a large number of patients, leading to megaloblastic anemia. Therefore, endocrinologists should be aware about the effects of metformin in patients with chronic diabetes. We recommend doing this study again on a larger number of cases to get more valid and accurate results.
26. Genetic Carrier Screening for Tay-Sachs Disease Using PCR-RFLP Test for a Private Mutation in a Kuwaiti Family
Afnan Abdulraheem Mubarak and Dr. Fawziah Mohammad Al-Kandari

BACKGROUND
Tay-Sachs disease (TSD) is an autosomal recessive neurodegenerative lysosomal storage disorder caused by mutations in the HEXA gene, resulting in a deficiency of β-hexosaminidase A (HEX A) enzyme, which causes devastating neurological disability and early death. Carrier screening programs for genetic conditions causing serious disease have been historically focused within a group such as Tay-Sachs among Ashkenazic Jews and sickle cell anemia among African Americans.

PURPOSE
To highlight the importance of carrier screening for families at high risk for TSD using PCR-based restriction fragment length polymorphism (PCR-PFLP).

METHOD
Genetic carrier screening for Tay-Sachs disease using PCR-RFLP test for a private mutation, c.2T>C (p.Met1Thr) was performed on 7 members of a non-Jewish Kuwaiti family with high consanguineous marriage. This family has one affected (homozygous) child with TDS who has c.2T>C (p.Met1Thr) in exon one of the HEXA gene. DNA sequencing of exon I of HEXA gene was also performed as a confirmatory test.

RESULTS
Out of the seven members of this family 4 were heterozygous (carrier) for c.2T>C (p.Met1Thr) mutation, while the rest were free of the mutation. Moreover, DNA sequences of exon 1 of HEXA gene confirmed the results obtained by PCR-RFLP of all 7 screened individuals. This mutation was in the initiation codon and was assumed to be a null allele, which produced the classical TDS phenotype in the affected child.

DISCUSSION AND CONCLUSION
molecular mutation analysis, prenatal diagnosis, genetic screening for carriers of Tay-Sachs disease and premarital counseling for population or a family at risk are useful tools and a very important step towards family planning to prevent or reduce the incidence of Tay-Sachs disease. Moreover, PCR-RFLP screening test provides simple, rapid, accurate and cost-effective methods of screening for the for known mutation.
27. The Effect of *Calotropis procera* on HLA-DR I Expression in Whole Blood
Rawaa Al.Ajmi¹, Fatimah Habeeb²

INTRODUCTION
*Calotropis procera* is a traditional medicinal plant and a flowering desert plant from the Apocynaceae/Asclepiadaceous family, which is able to grow in harsh environments. It is also known as "Ushar" or "Madar" in the Arabian Gulf. The plant is reported to possess anthelmintic, anticancer, antidiabetic, gastroprotective, cardiovascular and hypolipidemic, wound healing and anticonvulsant effects. *Calotropis procera* is used to treat fever, muscular spasm, asthma and dysentery. In addition, it possesses anticancer activities, antibacterial activities, larvicidal activities, and nematocidal activities. The root is used as medicine for leprosy, piles, wounds, tumors, parasitic infections, and dysentery. However, the effect of *C. Procera* on immune system is not clear.

METHODS
*Calotropis procera* gel was collected from fresh plant. Then, the gel was added to blood to reach different dilutions 1:2, 1:10, and 1:100. A sample with normal saline was used as a control with the same diluted ratio. The samples were incubated at 37 ºC, 5% CO₂ for 24 hours. After that, the viability was measured by using a hemocytometer to count and measure the cells.

RESULTS
The results showed that the gel had no toxicity on normal blood cells. The viability was > 90% in all dilutions at different time intervals. In addition, the gel significantly increased the expression of HLA-DR I on lymphocytes in whole blood (*P* ≤ 0.01).

CONCLUSION
*Calotropis procera* is non-toxic on normal blood cells. It also has the ability to modulate immune cell response by increasing the level of HLA-DRI expression.
28. The Protective Effect of Vitamin C on Paracetamol-Induced Hepatotoxicity in Wistar Rats
Afrah Saleh, Dr. Rana Al-Awadhi

INTRODUCTION
Paracetamol is a widely consumed drug for the relief of pain and fever. The excessive consumption of this drug causes toxicity in the body due to the accumulation of toxic metabolites in the liver. This toxicity can be reduced by the action of antioxidants, such as vitamin C.

PURPOSE
This study investigated the effect of 600 mg/kg (milligrams of the drug per kilogram of rat’s weight) of orally-administered vitamin C on highly paracetamol-dosed Wistar rats for a period of 10 days.

METHODS
Rats were divided into three groups. Group I was the control group. Group II was administered 500 mg/kg of paracetamol. Group III was administered 600 mg/kg of vitamin C along with the previous paracetamol dose in alternative days. Body weight was measured for each group at different occasions during the period of the study. At the end of the experiment, blood samples were collected from the animals under anesthesia for serum liver enzymes measurement. After the animals were sacrificed, their livers were dissected, fixed, and cut into thin tissue sections. The tissue sections were then stained using Hematoxylin-Eosin stain (H&E) and Periodic Acid Schiff’s stain (PAS), and the slides were examined for necrosis under the light microscope.

RESULTS
Group III rats, administered 600 mg/kg of vitamin C along with 500 mg/kg of paracetamol, showed enhanced body weight gain, reduction in liver enzymes level, and less necrosis in stained liver tissue sections in comparison with group II rats, which were administered the paracetamol dose alone.

CONCLUSION
The overall results of this study showed that vitamin C had a protective effect against the toxicity caused by excessive paracetamol intake.
29. Regulatory Immune Correlates Between Inflammatory Cytokines, Heme-oxygenase-1 and HSP70 in Type-2 diabetes Patients With and Without Vitamin D Deficiency
Farah Aladwani, Fadia Mahmoud

INTRODUCTION
Type 2 diabetes mellitus (T2DM) features insulin resistance, hyperglycemia, dyslipidemia, overproduction of inflammatory cytokines, and systemic oxidative stress.

METHODS
Inflammatory cytokines TNF-α and IFN-γ, heat shock proteins hemoxygenase-1 (HO-1), and HSP70 are profiled in peripheral blood mononuclear cells (PBMC) from 12 T2DM patients and 12 healthy control subjects. Cells cultured with PMA/ionomycin were evaluated by 3-color flow cytometry for immunophenotypic biomarkers. Relative to healthy controls, T2DM patients exhibited a vitamin D deficiency.

RESULTS
The results showed that there were significantly elevated percentages of inflammatory cytokines, including CD4+TNF-α+ and CD4+IFN-γ+ (p<0.05); and significantly lower representation of the anti-inflammatory cytokine CD4+IL-10+ T cells (p<0.05) versus both T2DM on vitamin D supplements and healthy controls. CD4+ T cell expression of the heat shock proteins HO-1 and HSP70 was significantly higher in T2DM with a vitamin D deficiency versus both T2DM on vitamin D supplements and healthy controls (p<0.05).

DISCUSSION & CONCLUSION
The results demonstrate a correlation between potentially pathogenic T cells and heat shock proteins HO-1 and HSP70, which are oxidative stress induced in both T2DM groups. Lower expression of inflammatory cytokines and heat shock proteins in T2DM with vitamin D supplements versus vitamin D deficiency group suggests that vitamin D plays an antioxidant and anti-inflammatory role in T2DM and provides a potential for T cell-related management strategies.
INTRODUCTION
Kuwait Central Blood Bank (KCBB) is one the most in the Middle East region in providing safe blood supplies for patients and provide accurate laboratory tests. Identifying infection markers such as are HBsAg, Anti HBc, Anti HBs, Anti HCV, Anti HIV, Anti HTLV, MalariaIF and TPHA among blood donors is important to provide safer blood, minimize the risk of transmission of infections.

METHODS
The statics used were obtained from the annual reports of KCBB. Microsoft excel was used to enter data in a form of organized tables. The data was checked for any mistakes in applying the numbers and years.

RESULTS
HCV positive donors increased in 1992. However, between 1994 to 1997 the number of HCV positive donors started to decrease, but in 1998 it reached 751 donors. In 1999, the number of HCV Positive donors decreased, but in 2008 it suddenly increased then decreased again. In 2016, the number of HCV positive donors decreased to 67 donors. The number of HIV Positive donors increased in 1992 and reached 62 donors. Patients with HIV positive reached 52 patients in 1997, but after that the number of patients decreased. In 2016, the number of HIV positive donors decreased to 3 only. The number of HBsAg positive decreased in 1999, but it increased in 1992. Fortunately, the number of HBsAg positive donors started to decreased after 1992.

DISCUSSION & CONCLUSION
Most of the infections started to increase after the Iraqi invasion in Kuwait. In 2016, the total donation started to increase with only 3 HIV positive donors and 67 HCV positive donors. This is because there was an increase in infection control and awareness campaigns of these infections throughout the years.
31. The Effect of *Ephedra* Species on HLA Expression in Whole Blood

Aldanah almutairi, Fatima Habeeb

**INTRODUCTION**
Herbal medicine was used widely as a remedy and treatment for several diseases. The genus *Ephedra* is one of the most effective herbs that have been used in traditional medicine. *Ephedra sinica*, the Chinese herb, has been used for treating cough, asthma, and inflammation in many cultures. It also contains ephedrine alkaloids, which is found in foods and supplements and used by athletes. There is another species of the herb known as *Ephedra alata*, which has been used by the Palestinian people. *Ephedra alata* has been claimed to treat several diseases such as allergies, edema, and cold. It also shows antimicrobial and anti-cancer activities. However, it is still not clear how this plant interacts with immune system components particularly antigen presentation. Therefore, in this study, we investigated the effect of *Ephedra* on HLA-DR1.

**METHODS**
175g/L and 350g/L of the *Ephedra* were boiled. Then, 50 ml of the boiled herb was added to 100 ml of blood. After that, samples were incubated at 37°C, 5% CO₂ for 21 hours. After incubation, a viability test was done with 10 % trypan blue dye exclusion. Also, Flow cytometry analysis was conducted using FITC labelled HLA. Samples with normal saline were used as a control.

**RESULTS**
The results showed that the *Ephedra* species had no toxicity on human leukocytes from whole blood. In addition, the result showed that the herb significantly increased the expression of HLA-DRI at a concentration of 350 g/L (P ≤ 0.01).

**CONCLUSION**
*Ephedra* species might modulate immune cell response particularly antigen presentation via MHC as it seems that the *Ephedra* at a particular concentration i.e 350 g/L increased the expression of HLA-DR1 with no cytotoxic effect on normal cells.
32. Bacterial Cross-contamination of House Cleaning Tools
Sara Al Hajeri, Ahmad Al Hassan

INTRODUCTION
Many bacterial species live in the tools used daily in cleaning our homes. Some of the frequently used tools are dish sponges and towels. Contaminated, any of these might lead to cross-contamination in kitchens since they can transfer microorganisms to surfaces where these microorganisms can survive for hours or days and eventually contaminate food. The aim of this project is to test for the presence of any pathogenic bacteria in common house cleaning tools.

METHODS
The study involved 40 samples; 20 were from kitchen sponges, 15 were from bathroom sponges, and 5 were from house cleaning tools, which were basically towels. The samples were identified using several microbiological techniques and tests including general and differential media, gram staining, and API testing.

RESULTS
The results showed that 30% pathogenic bacteria such as Salmonella spp., Serratia spp., and Pseudomonas sp. existed in kitchens and bathrooms, and they may all potentially cause different diseases.

CONCLUSION
These bacteria can cause dangerous cross-contamination for the elderly and children. The most frequently found bacteria in sponges was Enterobacter cloacae, which is normally presented in bathrooms. Therefore, washing fiber tools, or sponges, used in washing utensils in the kitchen should be thoroughly and constantly cleaned so as not to be susceptible to bacteria as a result of the accumulation of food left in it.
33. Does Wearing Gold or Silver Plated Jewellery Increase the Chances of Skin and Soft Tissue Infection Transmission?

Noura A. Alhoutii¹, Norya AlMaraghi ²

INTRODUCTION
Skin and soft tissue infections can be caused by the individual’s own normal flora. They can vary in severity depending on the layers the microorganism has invaded and the causative agent of the infection. Classification is done to provide proper management guidelines. These infections are more aggressive in patients with diabetes mellitus, HIV infection, or elderly patients. This is especially true if the bacteria were antimicrobial resistant. The presence of patient related risk factors and etiological factors can increase the chances of acquiring SSTIs. Antimicrobial agents are widely used for the treatment and management of skin infection. In ancient times, gold and silver nanoparticles were also used.

METHODS
One hundred patient from the dermatology clinic were studied with cellulitis caused mainly by S. aureus. The subjects were from the medical field, 50 female health-care workers were wearing gold plated hand bracelets and the others were wearing silver plated bracelets. Each subject was asked to scrub-up and a swab was taken to detect the presence of bacteria. The same bracelets were swabbed after the work shift, before scrubbing, to compare the result.

RESULTS
Thirty-five of the gold-plated bracelets had S. aureus. Only 15 of the swabs showed Group A Streptococci, four had Haemophilus species, two Prevotella species, and two porphyromonas species. Out of the 50 subjects with silver-plated bracelets, 40 bracelets were shown to have S. aureus. In both cases, the bacteria were methicillin-resistant strains.

DISCUSSION & CONCLUSION
Wearing jewellery by hospital staff can act as a vehicle for transporting infectious agents in and out of the hospital. This study confirmed that both gold and silver, despite their antibacterial activity, can increase the carriage rate of transporting different hospital-acquired infectious agents to the community.
34. The Effect of Curcumin on Hepatic Cells of The Liver of Male Wistar Rats
Arwa Naif Al-Shammari

INTRODUCTION
Curcumin is an active ingredient of turmeric, and it is a member of the ginger family (Zingiberaceae). Many studies have proven that curcumin acts as an antioxidant and anti-inflammatory. Other studies have shown that curcumin is able to reduce diet-induced liver fat (steatohepatitis) and studies on animal models have proven that curcumin effectively prevents high-fat diet induced obesity, which leads to hyperlipidemia. This research was conducted to investigate the effects of curcumin on sugar-induced obesity, hyperlipidemia, and fat accumulation in male Wistar rats.

METHODS
Six male Wister rats were divided randomly into three groups; one group was the control and the other two were experimental groups. Rats in one experimental group were fed with 60 grams of sugar dissolved in 100 ml of water throughout the experimental period, which was 20 days. In group two, the rats were fed with 60 grams of sugar dissolved in water during the first 10 days, then, they were fed with curcumin in the next 10 days. Forty grams of curcumin was dissolved in 0.1% of sugar and given orally. Blood samples were collected from rats and liver tissue was stained with Hematoxylin and eosin stains, Periodic acid Schiff’s stain to prepare these tissues for microscopic examination.

RESULTS
The control group normal serum analysis and histology features. Serum analysis increased in ALT, triglyceride, VLDL and decreased in HDL. Microscopic examination had vacuoles, glycogen accumulation, liver damage, in some areas.

DISCUSSION & CONCLUSION
Damage of liver tissue was due to high sugar intake, while curcumin slightly reduced the damage. In conclusion, curcumin had a slight effect in preventing the high-fructose induced hyperlipidemia and hepatic steatosis.
35. The Effect Of Coffee Consumption On Kidney Of Wister Rats
Mariam Al-Shammari and Rana Al-Awadi PhD

BACKGROUND
Coffee is one of the most consumed drinks in the world. People always drink coffee in order to increase concentration and attention while reducing fatigue. Overdose of coffee consumption can result in diverse side effects. This study was carried out to investigate the effects of coffee consumption on Wister rats for two weeks.

METHODS
In this study rats were divided into three groups. The first group was the control rats and their body weight was 78 grams. The second group contained two rats and were treated as the Arabic coffee group. The third group contained two rats and were treated as the Nescafé coffee group. At the end, a part of the kidney was obtained, processed, sectioned, and stained with H&E and a PAS stain. Tissues were examined under the microscope.

RESULT
Changes occurred in the experimental rats. They gained weight. Both the Arabic and Nescafé coffee groups showed an increase in glucose and decrease in creatinine. Morphology changes were noticed in both stains.

DISCUSSION
Elevated glucose levels lead to renal failure in rats. Also, decreased creatinine levels resulted in impairment of the kidney function. Coffee consumption may lead to renal failure and development of glomerular diseases after two weeks.

CONCLUSION
Thus, this study shows Nescafé coffee is more threatening to renal failure than Arabic coffee.
INTRODUCTION
Venous thromboembolic disorders (VTE) are serious disorders with high morbidity and mortality rates. There are many risk factors for VTE, some are genetic while others are acquired. The most common genetic risk factor for VTE is Factor V Leiden mutation (FVL). FVL is a variant of human clotting factor V, which is one of several substances that helps in blood clotting. FVL causes an increase in blood clotting, a condition known as hypercoagulability, which may be manifested clinically as VTE. FVL was found mostly in Caucasians but was almost absent in non-Caucasians. This project was done to determine the prevalence of FVL in Syrians living in Kuwait.

METHODS
Sixty apparently healthy Syrian volunteers were randomly selected from the general Syrian population living in Kuwait, of whom 23 were females and 37 were males with an age ranging from 21-60 years old. A blood sample was collected from each volunteer to do DNA extraction followed by real-time PCR to detect the presence of FVL.

RESULTS
The FVL mutation was detected in 3 participants, all of them were heterozygous (5%). The allelic frequency was 0.025. No homozygous cases were reported.

DISCUSSION & CONCLUSION
The prevalence of FVL in Syrians living in Kuwait is relatively high. Further expansion of the study to more cases is recommended in order to get accurate results, which may be used for proper therapeutic approaches and prevention of adverse consequences of VTE.
37. Plasma Derived Exosomes Characterization Using Western Blotting, Flow Cytometry and RNA Quantification

Romance Zendah¹, Hamad Yaseen²

INTRODUCTION
Exosomes are some of the submicron extracellular vesicle classes that were found to be released by various cell types and are found in different body fluids. Exosomes consist of lipids, mRNAs, and proteins. In addition, researchers found that these vesicles carried cell-specific bioactive cargo that are transported to other cells modifying their physiology. In the current investigation we aim to isolate exosomes from plasma and characterize them using two ways. The first is by analyzing the presence of CD63, and the absence of Grp94 expression in the isolated exosomes using western blotting. The second is by the analysis of the presence of CD63 and TSG101 and the absence of Grp94 using fluorescence-activated cell sorting, applied in flow cytometry. Finally, there will be an exosomal RNA isolation and quantification using Qiagen Micro Kit.

METHODS
The best method for exosomes isolation is ultra-centrifugation, which depends on high speed centrifugation for several intervals to separate exosomes from vesicles of different sizes; therefore, exosomes were isolated using this method. Western blot was then performed to characterize the exosomes using markers CD63 and GRP94. Flow cytometry was performed to characterize the exosomes using markers CD63, GRP94 and TSG101. Using the Qiagen Micro Kit total exosomal RNA was isolated from two plasma samples and quantified.

RESULTS
Western blot showed negative results for both CD63 and GRP94; however, flow cytometry showed negative results for GRP94 and positive for CD63 and TSG101. Exosomal RNA quantification showed a calculated average total RNA amount of 184.9 ng.

DISCUSSION & CONCLUSION
Exosomes were successfully isolated using an ultracentrifugation method and characterized by the presence or absence of a specific marker. Furthermore, flow cytometry is a more sensitive method compared to western blot. This may be related to the volume of the starting material. In addition, exosomes can be characterized by their RNA cargo by using an RNA specific kit.
38. Air-Conditioning Systems: A Possible Source of Infection
Noora Alazemi, and Norya Almaraghi

INTRODUCTION
Air conditioning can be a source of infection through the spread of microbial aerosols. Since the climate in Kuwait is very hot and humid, air conditioning is turned on almost all day long. The number of humans that occupy a building, the temperature and humidity, and the design of the air-conditioning system can all affect microbial growth in the air-conditioning system. When central air-conditioning spreads microbial agents, human health can be affected as a result of inhaling microbial agents. Opportunistic infections are an infection caused by bacteria, virus, or fungi. Normally, they do not affect healthy individuals. However, for immunocompromised people, severe illness can occur. In order to decrease contamination from central air-conditioning, air-conditioning systems must be carefully designed. The aim of this study is to detect the types of bacteria present in HVAC systems in houses located in different areas of Kuwait.

METHODS
Thirty samples were taken from ceiling diffusers in the late winter season from February through to March 2018. Initially, the sample was cultured using four different microbiological culture media (blood, MacConkey, Sabouraud, and Mannitol) and incubated for 24 hours at 37°C. Then, samples were stained using Gram stain: A colony of bacteria was mixed with saline using a sterile cooled loop and the slide fixed by heating. After that, crystal violet was added to the smear for one minute, and the slide was rinsed with distilled water. Then, the smear was stained with Gram's iodine for one minute and rinsed with distilled water. After that, the smear was decolorized using acetone for three seconds and rinsed with distilled water. Finally, to counter-stain the smear, Safranin was added for one minute and rinsed with distilled water. The smear was then ready to be examined. For Gram-positive bacilli bacteria, a motility test was done: A colony of bacteria was added to two millilitres of broth (Himedia), and the tubes were incubated at 37°C for 24 hours. For Gram-negative bacteria, an API20E (bioMerieux) was done: A colony was mixed with API suspension and then added to microtubes. After that, strips were incubated for 24 hours at 37°C.

RESULTS
All samples showed bacilli with motility 30 (100%). Two samples harbored Enterobacter cloaceae 2 (6.6%), and there was one sample each of Rahnella aquatilis, Citrobater freundii, Serratia plymuthica, and Providencia sturtii 1(3.3%).

CONCLUSION
Air-conditioning ducts can harbor different kinds of pathogenic bacteria that can cause serious infections, especially to those with compromised immunity. The results reported in this study indicate the presence of motile Bacillus, which is found in the environment and isolated from dust, soil, or water.
INTRODUCTION
Gestational diabetes is defined as the identification of high blood glucose levels during pregnancy. Increased levels of obesity and a lack of exercise are thought to be the primary causes of GDM. Additional factors include women's age, and a family history of diabetes or GDM. Insulin sensitivity and inadequate insulin response are pathophysiological mechanisms responsible for the development of GDM. In the case of insulin resistance, when the body produces a certain amount of insulin, the target cells do not respond to it, and the body is unable to use it in effectively, which may lead to high blood glucose. The role of the IGFBP is to transport the IGF hormones into the receptors present on the target cells. In gestational diabetes mellitus, IGFBP1, IGFBP3, IGF1, IGF2, and insulin are all dysregulated in the maternal or fetal circulation; thus, the placental function may be affected, and the values of these hormones can either be high, low or remain the same.

METHODS
Serum samples were collected from 50 pregnant women (21 to 35 years) with gestational diabetes mellitus during their routine check-up at the Maternity Hospital. The control group had 30 healthy women. Samples were aliquoted into 3 batches in Eppendorf tubes and stored at -20°C. Renal function tests (Urea, creatinine, Na, K and Uric acid), liver function tests (ALT and ALP and total bilirubin) in addition to glucose, albumin, cholesterol, Ca, corrected Ca, total protein and iron were analysed using chemistry analyser DXC800 at the maternity hospital. Leptin was analysed using Elisa immunoassay. Insulin was analysed using an access Ultrasensitive insulin kit purchased from Beckman Coulter. A DXI800 machine was used for the quantitative determination of insulin. All data obtained was presented as the mean of the Standard Error of Mean (S.E.M). An unpaired T test was used to compare between GDM and the control group. A p-value of < 0.05 was considered the minimum level of significance.

RESULTS
Analysis of the renal function test, liver function test and other biochemical analysis showed no significant differences between the GDM samples and those of the control group. However, the mean % value for HBA1C was significantly higher among the GDM group (p< 0.005) compared to the control group. Values obtained for hormone analysis revealed that leptin and insulin were significantly higher among GDM subjects (p< 0.01) compared to control subjects. Furthermore, data for IGFBP-1 analysis revealed significantly higher levels among GDM patients (p< 0.001) compared to control samples.

CONCLUSION
Significant changes in serum levels of insulin, leptin, and IGFBP-1 were observed in females with GDM. These could indicate insulin resistance, which in turn may affect the levels of leptin and IGFBP-1, and thus, potentially, the outcomes of pregnancies. Further studies are recommended with a larger sample of diabetic subjects in order to confirm the present findings.
INTRODUCTION
Understanding the principles of disinfectants is very important in preventing the spread of illnesses and life-threatening diseases. All disinfectants are harmful to both humans and animals. Therefore, disinfectants should be handled with care. Disinfectants have various antimicrobial ranges when used in differing concentrations, and certain of these concentrations can be harmful to human and animal health. As such, a number of factors must be considered, including human health and environmental safety. The type of disinfectant impacts the effect on microbes. Staphylococcus aureus, methicillin resistant staphylococcus aureus (MRSA), Escherichia coli (E. coli), and Salmonella are used in this research to compare between two disinfectants from the same company made in the KSA and the USA.

METHODS
After the Agars were prepared, subcultures of E. coli, Salmonella, S. aureus, and MRSA were made and placed in a refrigerator. Ten sterile tubes were labelled for each bacterium (total = 40 for each disinfectant) to start the dilution. Suspensions for each bacterium were prepared (0.5mcf) in the last tube. In tube 1, 1ml of disinfectant was added to 9ml of broth. From tube 2 to tube 9, 5ml of broth was added. Five millilitres from tube 1 was transferred to tube 2, 5ml from the second tube was taken and transferred to tube 3, and so on for the following tubes to achieve dilutions. In tube number 8, 5ml was taken and discarded, so tube number 9 acted as a positive control. Then, 5μl of 0.5mcf bacteria was added to each tube. After 2.5 minutes, 20μl was taken from each tube and spread on the plate. Four results were recorded (2.5, 5, 7.5, and 10 minutes). The results are expressed as -ve, +1, +2, +3, +4 Colony Forming Unit (CFU).

RESULTS
The disinfectant made in the USA was thought to be more effective; however, the product made in the KSA showed more effective antimicrobial activity against E. coli at a dilution of 1/60, while that made in the USA was not effective in killing all bacteria, regardless of whether the bacterial load was lower or not. Similar results could be seen when using both disinfectants against S. aureus strains, where the dilution of 1/60 was effective in killing all bacteria cultured on the plate when using the chlorohexidine disinfectant made in the KSA, while that made in the USA did not kill the pathogenic S. aureus; however, the bacterial load was less. Similar results were seen when using the same disinfectants with the same concentration of chlorohexidine against MRSA and Salmonella. All bacteria were killed using a 1/60 dilution of the chlorohexidine disinfectant made in the KSA and specifically when the growth was measured after 7.5 minutes, but that was not the same scenario when using the chlorohexidine disinfectant made in the USA.

CONCLUSION
Disinfectants and their use are widely reviewed in literature, especially in recent years where antimicrobial resistance has shown increased rates, and disinfectants have reached their limit of effectiveness against most antimicrobial agents. The use of disinfectants is crucial in reducing contamination. Many factors play a role in the effectiveness of disinfectants, including the concentrations of chemicals used or the period of time required for killing the infective pathogen. Many people in Middle Eastern society relate the effectiveness of a disinfectant to the country it is manufactured. Many even prefer using disinfectants made in the USA over those made in regional countries. This study compares disinfectants made in the USA and a regional country (KSA) and provides evidence that disinfectants made within the region are more effective against infective pathogens.
INTRODUCTION
This research investigates the occurrence of microbial contamination that results from laundry and dishwasher’s usage which in turn affects humans. To the normal eyes, clean surfaces of dishwashers and laundry might seem they are physically very neat and clean but in terms of hygiene, both are not hygienically clean because both dishwashers and laundries are contaminated with several forms of microorganisms. These microorganisms can affect humans when they wear the dress or use utensils and vessels washed in such environment. Within the context of laundry, the investigation will examine clothing and household linen and identify primary and secondary sources of contamination.

AIM
This study was conducted to investigate the presence or absence of bacteria by identifying such types of microorganisms in laundries and dishwashers. Swab samples were taken from these sites to check their presence and subsequently identify them.

METHODS
50 swab samples were taken from different parts of washing machines and dishwashers. Bacterial identification tests were performed using gram stain, catalase test, oxidase test and API tests including API-20E, API-staph, and API-strep, and VitekMs system was used for identified some of bacteria.

RESULTS
Investigation was carried out in three sites, namely site one, site two and site three and the most contaminated parts of all three sites were tub, filter, drain hose inside the washing machines itself and from dishwasher drain hose, upper and lower spray arm.

CONCLUSION
With the use of the effective methods of disinfection, safety and high hygiene can be achieved to overcome contaminations and diseases.

DISCUSSION
The investigation of microorganisms in both laundries and dishwasher system in Kuwait which were identified from the three sites (site one, sites two and site three) showed the presence of several bacteria and only some pathogens in the sampling.
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1. Dementia Knowledge Among Kuwait University Students: A Descriptive Study
Ghadeer AlHaddad 1, Sarah AlAli 2, Dr. Fahad Manae and Dr. Mehdi Rassafiani

BACKGROUND
In prevention and early intervention of dementia, awareness is the key factor. Therefore, the aim of this study was to determine the students’ level of knowledge in all campuses in order to understand the current situation and plan for future intervention.

METHODS
A cross-sectional study was employed to examine the knowledge of Dementia. Dementia Knowledge Assessment Scale (DKAS) was the valid and reliable assessment tool that was used. An Arabic version of the DKAS was developed to use in this study. The Analysis included demographic data, the comparison of the DKAS subscales and dementia total score. The IRB committee approval was acquired.

RESULTS
A total of 1350 students participated in this study. The results indicated that the students in different campuses had a significant difference in the dementia total score (p = 0.000) as well as a significant difference between all subscales of the DKAS for Causes and Characteristics (p = 0.000), for Communication and Behavior (p = 0.005) for Care Consideration (p = 0.019) and for Risks and Health Promotion (p = 0.000).

DISCUSSION
The results showed that students in faculties that are related to the health science field have higher results about dementia compared to the other faculties since dementia knowledge is part of their education. Most of the campuses showed better results in the care consideration subscale because caring for elderlies is interrelated to our culture. Khaldiya campus showed the lowest results in communication and behavior. This may be because their focus is more on mathematics and equations.

CONCLUSION
The baseline knowledge of the students was moderate. Although there were differences between the results, all students require more knowledge about dementia. This will help us to enhance a more appropriate care and support system in the future.
2. Dementia Awareness among Healthcare Professionals: A Descriptive Study
Dana I. Qaddoura, Fahad Al-Manee, PhD

INTRODUCTION
Dementia is a syndrome that is characterized by a cognitive and functional degeneration, which occurs later in life. Alzheimer's disease is the most common form of dementia. Patients of dementia need beneficial care provided by healthcare professionals. Healthcare professionals, including physicians, nurses, allied health care, and pharmacist, have a major role in treating patients with dementia. This research aimed to investigate the healthcare knowledge level about dementia.

METHODS
A descriptive study was done in 7 public governmental hospitals in Kuwait. Knowledge level were measured by the dementia knowledge assessment scale (DKAS), which is a reliable and valid measurement. The questionnaire was manually distributed to healthcare professionals.

RESULTS
There were 1005 participants (36.5% males and 63.5% females) included in this study. The data was done using the SPSS-PC software. Results showed that the overall knowledge about dementia was significantly low with a significant difference between all groups in the four DKAS subscales: (a) causes and characteristics, (b) communication and behaviors, (c) care considerations and (d) risks and health promotion.

CONCLUSION
An obvious low level of dementia knowledge was identified among Kuwait healthcare professionals in public governmental hospitals, and the results suggest that more training should be offered to improve knowledge and increase awareness about this disease. Moreover, improving knowledge of dementia will lead to improving the health care provided to patients with dementia.

DISCUSSION
The results of this study showed that there is a low level of knowledge about dementia among healthcare professionals. It is recommended that more training should be offered to healthcare professionals in order to increase their knowledge about this condition.
3. The Quality of Sleep and the Satisfaction with Daily Occupation in People Recovering from Substance Abuse
Layal Al Onaizi, Laila Abdou, Dr. Shashidhar Rao

INTRODUCTION
Substance abuse is a contemporary and continuing epidemic problem in all societies. Evidence has shown that one of the most common complaints of individuals suffering from substance abuse at the rehabilitation center is sleep deprivation. The objective is thus to explore the quality of sleep and satisfaction with daily occupation in non-substance abusers and those recovering from substance abuse during their rehabilitation process.

METHODS
This descriptive study consisted of two groups of Kuwaiti male participants aged between 21 to 25. Fifteen non-substance abusers were recruited from Kuwait University students and another 15 from inpatients and outpatients from the Kuwait Addiction Treatment Center. The instruments used were the demographic questionnaire, the Pittsburgh Sleep Quality Index (PSQI), and the Satisfaction with Daily Occupations (SDO).

RESULTS
Outcomes of SDO assessment revealed that 53.3% of substance abusers were not satisfied with their daily activities, while 86.7% of non-substance abusers were satisfied. Accordingly, the PSQI showed the majority of substance abusers suffered from poor quality of sleep (86.7%), while most of the non-substance abusers exhibited having good quality of sleep (86.7%).

DISCUSSION
It is important to address the quality of sleep and satisfaction of occupational performance in recovering substance abusers in order to encourage positive rehabilitation outcomes with a goal to prevent any possible relapses in the future. However, these findings are not conclusive due to the small sample size, limited age range, female ward inaccessibility and possible poor insight as most of the substance abusers were recently admitted.

CONCLUSION
The data supports that sleep has a vital role in enhancing mental health, physical health, and quality of life. Not addressing sleep issues in recovering substance abusers can hinder their opportunity to reach their maximal potential capabilities and optimal rehabilitation outcomes.
INTRODUCTION
Several studies have explored the impact of stress on students in profession courses. However, the data on students among allied health courses is limited. Students perceived stress at varied levels during the course period. To overcome stress, students use a variety of positive and negative strategies. This study aimed to describe the perceived stress among the students of AHS and their coping strategies.

METHODS
This was a cross-sectional study with a sample of 242 undergraduate students at KU Faculty of Allied Health Science from first to fourth year. Both males and females were included. The Perceived Stress Scale, which consists of 10 questions, was given to the students to rate their perceived stress. The Brief COPE inventory, which consists of 28 questions, was given to know their coping strategies.

RESULTS
The results show that students among all the courses experience moderate levels of stress. Planning (88%) and active coping (86%) are the most common coping styles that are used by AHS students. Students with a high level of stress used planning 95%, behavioural disengagement 93% and denial 93%.

DISCUSSION
Students experience stress throughout the program and it is not course specific. However, stress difference is dependent upon the coping strategies used. As shown in this study, although moderate to severe stress is experienced by students among all the courses, it is encouraging to note that the positive coping style is more common among all the students as compared to the negative strategies.

CONCLUSION
The study concluded that most of the students from different specialties suffered from perceived stress, which may affect all aspects of their life. Therefore, more studies should focus on the best ways to overcome stress to improve their quality of life.
5. Stress Level among Occupational Therapy Students at Health Sciences Centre in Kuwait University

Ali Al-Fadhli¹ and Mohammed Nadar²

BACKGROUND
Previous studies have shown that health sciences students are vulnerable to stress. Several reasons that contribute to students' stress have been identified. These include school requirements, life situations, and routines. The aim of this study was to measure the level of stress among OT students at HSC.

METHODS
The target sample was all OT students enrolled in the Faculty of Allied Health Sciences. The inclusion criteria were to be an OT student in their second to fifth year of the program. The standardized Perceived Stress Scale was used to measure the students' stress, in addition to a demographics questionnaire. The survey was distributed online (google drive document) via WhatsApp to the participants. A total of 82 students responded to the survey.

RESULTS
The results showed that third year students had the highest stress level (mean= 24.38, SD= 4.70), which is classified as moderate perceived stress. The hours of sleep of students during the weekdays was (mean=5.07, SD=3.922), which is below the norm for normal sleep hours. In addition, 81.7% of the participants reported not going to a gym or physical fitness centre.

CONCLUSION
The study showed that OT students had different levels of stress, with only the third- year student being under moderate stress. Further investigations need to examine the level of stress among other health sciences disciplines.
6. General Health among Health Sciences Center Students: Implications for Developing a Health and Wellness Program

Aisha Alshuhomi¹, Aisha Alkhalefi², Abdulaziz Shayea³, Nasser Al-Otaibi⁴, PhD

INTRODUCTION
A healthy lifestyle decreases the risk of having diseases and improves overall performance. Students at academic institutions are likely to experience an unhealthy lifestyle possibly due to excessive university demands.

OBJECTIVE
The general health status of Health Science Center (HSC) students at Kuwait University has not been measured; therefore, the purpose of this study was to explore the general health status of these students.

METHODS
The study design was non-experimental, descriptive, and cross-sectional. A convenient sample among 224 HSC students was conducted. The survey instrument consisted of a demographic sheet and General Health Questionnaire, which included 4 sections about sleep, nutrition, physical activity and stress.

RESULTS
The participants involved in this study were 224 students from all 7 majors in HSC (6.7% males, 93.3% females). Students of different majors demonstrated poor sleeping patterns (p=.031) with the highest percentage (80%) of dentistry followed by occupational therapy (60.7%). Also, the results showed that students demonstrated poor nutritional habits (P=.019). In addition, in the physical activity section, less than half of the participants (39.7%) were active. There was a strong significant difference between groups with regards to their level of stress (df=7, F=65.33, P< .000). Hence, radiologic sciences reported to have the highest level of stress (15±4.5), whereas dentistry students had the lowest (7.8±5.1).

DISCUSSION
The majority of the participants showed poor sleeping patterns and demonstrated inadequate physical activity; this was in line with the published literature. To address these problems, it is recommended that students must do regular check-ups, have a healthy diet and participate in regular physical activities. The general health status of students in other faculties should also be monitored.

CONCLUSION
The study findings indicated that Health Science Center students generally demonstrated poor health status. Therefore, it is recommended that there be an integration of health and wellness programs for these students to ensure a better healthy lifestyle and thus achieve the desired educational performance.
Haneen k. Abdalla¹, Hiba I. Yaqoub², Naser M. Alotaibi³, PHD

BACKGROUND
Schizophrenia is a mental illness, affecting 1% of the worldwide population. It causes deficits in cognition, which is considered the main reason for the poor occupational participation. The purpose of this study was to examine the relationship between cognitive skills and the occupational participation among patients with schizophrenia in Kuwait.

METHODS
The study was non-experimental, descriptive, and cross-sectional. Participants aged between 21-64 and diagnosed with schizophrenia were recruited from the Kuwait Center for Mental Health (KCMH). They were assessed using the occupational questionnaire, cognitive battery test and demographic questionnaire. Descriptive statistics were utilized to analyze the data, and Pearson correlation was used to identify the relationship between the study variables.

RESULTS
The final sample was 20 participants (12 males and 8 females). The study results showed that the participants spent a mean of 4.7 hours occupied, a mean 8.4 hours unoccupied and a mean 10.9 hours sleeping. In addition, the study findings revealed that there was a relationship between the cognitive skills and the time use, but it was not significant. However, information processing speed was significantly associated with the time the patients spent unoccupied (r= -0.49) (P=0.028). This means the more time patients spent doing nothing meaningful, the more their speed in processing information was reduced.

DISCUSSION & CONCLUSION
The results showed that patients diagnosed with schizophrenia have difficulty participating in everyday activities and maintaining a balanced life style as most of their day consists of only sleeping, eating and basic self-care. This may be explained by the low processing speed as more time is needed to process information and react to different situations, slowing down the ongoing occupational participation process. Therefore, to address the issue of unbalanced daily routine of the study participants, it is highly recommended that a well-structured daily routine program for the residents at the KCMH be included.
8. Responsiveness of the Arabic Version of Satisfaction with Daily Occupations
Najat Al-Otaibi¹, Seetah Al-Ajmi², and Dr. Fahad Al-Manee

INTRODUCTION
Responsiveness is an instrument's ability to detect change over time. The Satisfaction with Daily Occupations instrument (SDO) targets aspects of everyday occupations and addresses the client’s satisfaction with performing an occupation. The purpose of this study was to test the responsiveness of the Arabic version of the satisfaction with daily occupations among neurological patients.

METHOD
Prior to data collection, ethical approval was obtained from the institution review board (IRB) committee. A sample of 17 clients was recruited from the inpatient and outpatient neuro-clinics at three governmental hospitals in Kuwait. The Arabic version of Montreal Cognitive Assessment (MoCA) was used as a screening tool to detect cognitive impairments. SDO and Global Rating of Change (GRC) scales were administered pre and post with a period of 4 weeks.

RESULTS
A total of 17 participants took part in this study. The majority were Kuwaiti (88.2%), Females (64.7%), and 35.3% of them were retired (occupation). This study showed that the responsiveness of the Arabic version of the satisfaction with daily occupations was not significant to change. There were changes in the GRC scores (base-line and 4 weeks post intervention) (P=0.30), pre-post performance of the SDO Arabic version (P=0.15), and pre-post level of satisfaction of the SDO Arabic version (P=0.17).

DISCUSSION & CONCLUSION
Although the SDO Arabic version was not responsive to change, there was an improvement in patients’ status between the base line and intervention period. Various factors could have affected the results such as time constraints, the small sample size, and the fact that the majority of the participants were diagnosed with stroke. Although the Arabic version of the Satisfaction with Daily Occupations was not responsive, it is a useful tool to document changes in patients’ status over time. Future studies should include larger sample size, increase the duration of occupational therapy interventions, and include participants with various neurological conditions.
9. The Relationship Between Kuwaiti High School Students’ Weights and Their Symptoms of Depression: A Non-Experimental, Cross-Sectional, And Correlational Pilot Study
Dalal W. Ethbayah and Shaikha A. AlSubaite

BACKGROUND
The disequilibrium between the number of calories that people consume and burn leads to obesity. Body weight satisfaction is an important factor for adolescents because it is correlated with fulfillment of personal interactions and overall happiness.

PURPOSE
To identify the relationship between obesity and depression for high school students in Kuwait.

METHODS
A Non-experimental and correlational study was implemented at 6 governmental schools in Kuwait from all grades. 198 participated in this study. They were assessed using the Beck Depression Inventory II. A sociodemographic questionnaire was used to collect data. The weight and height of the participants were measured to report the Body Mass Index (BMI). Spearman correlation and independent-samples t-test were used to analyze the results.

RESULTS
The participants were 50% males and 50% females. The results indicated that 17.2% and 15.2% of the participants were overweight and obese, respectively. The results of the spearman’s correlation showed a low, negative and significant relationship between students’ grades and their BMI \( r=-0.211; p=0.003 \). However, there was not a significant correlation between BMI and depression \( r= 0.119; P=0.095 \). The results also indicated that males had significantly higher BMI compared to females \( p =0.006 \), whereas females had significantly more depressive symptoms than males \( p = 0.045 \).

DISCUSSION
More than one third of the students showed an increased BMI, which might cause future health problems. This increase in BMI could be due to sedentary lifestyle and poor nutrition. Unlike the published literature, the increased BMI of students was not significantly associated with depressive symptoms.

CONCLUSION
Although there were some students with high BMIs, there was no significant correlation between BMI and depressive symptoms. We recommend the inclusion of wellness programs in the governmental high schools to address potential health problems students might encounter in the future.
INTRODUCTION
Mirror therapy (MT) is a technique used with stroke patients to improve their motor function. However, no strong conclusions on effectiveness of MT have been determined yet. Therefore, this study aimed to assess the effectiveness of MT on upper extremity (UE) motor function for sub-acute stroke patients in Kuwait.

METHODS
A single case experimental design was used, and two clients were involved in the study. Twenty minutes of MT were implemented four times a week over a period of four weeks. For the baseline phase, repeated measurements were done, nine times for one client and four times for the other client using Fugl-Meyer Motor Function assessment (FMA), and it was done twice a week during the intervention phase. Brunnstrom Recovery Stages (BRS), and Barthel Index (BI) were applied once before the baseline phase, as well as prior and after the intervention phase.

RESULTS
In FMA, both clients’ scores increased in upper extremity, hand, and coordination sub-test, but no improvement was indicated in the wrist sub-test, and slight improvements were indicated in BI and BRS.

DISCUSSION AND CONCLUSION
This study revealed that MT has positive effects on proximal joints more than distal. Additionally, both clients demonstrated noticeable improvement in coordination. On the other hand, no change in wrist motor function was observed, and further research in the literature is needed to indicate the rationale behind this steadiness. No functional improvement was indicated in BI, which might be due to the focus of the therapy on simple movements rather than complex ones and the limited number of sessions. The slight difference in BRS, might be due to the low sensitivity of the Brunnstrom scale. One of the limitations was the low number of participants. However, this study was able to provide more evidence and support on the effectiveness of MT in sub-acute stroke patients' motor function.
11. The Psychosocial Aspects and Coping Strategies for People with Burn Injuries in Kuwait
Hanan Al-Hebaishi,¹, Nourah Al-Jazzaf,²

INTRODUCTION
Burn injuries can result in serious psychosocial problems, including depression and anxiety. Patients with burn injuries have shown higher degrees of maladaptive behaviors such as difficulty coping with new changes in their lives after the incident. The aim of this study was to investigate the relationship between depression and anxiety among adult burn patients and their coping strategies.

METHODS
The study included a sample of 20 participants with burn injuries. Two standardised outcome measures were used to collect the data; the Depression Anxiety Stress Scale (DASS-21), which measures the participants' level of psychosocial problems, and the Brief COPE, to assess the patients' coping strategies. The data was collected at the Al-Babtain Burns & Plastics Hospital.

RESULTS
The participants had moderate levels of anxiety (mean=11.5, SD=9.28), mild depression (mean= 12.75, SD=9.14), and mild stress (mean=15.1, SD=10.47). The time of the burn injury was negatively correlated with depression ($p=.01$, $r=-0.537$), anxiety ($p=.023$, $r=-0.505$), and stress ($p=.017$, $r=-0.527$) indicating that psychosocial problems decreased with time. The most commonly used coping strategies in Kuwait were “religion” (mean=6.5, SD=1.7) and “acceptance” (mean=6.45, SD=1.4), whereas “substance use” was the least used coping strategy (mean=2.25, SD=0.7).

CONCLUSION
Psychosocial problems for patients with burn injuries ranged from mild to moderate; however, the psychosocial problems decreased with time one year after the injury. The healthcare system should have stronger emphasis on psychosocial interventions for the patients with burns in Kuwait.
12. Parent Satisfaction with Sensory Integration Services in Kuwait  
Shahad Dashti, Mariam Mohommad, and Dr. Mehdi Rassafiani

BACKGROUND
Sensory integration (SI) is the most used approach for intervention within occupational therapy in pediatrics. It refers to the process by which information is received through the senses, organized and used it to participate in everyday activities. The approach of SI includes activities that tend to organize the sensory system by providing sensory inputs, which are beneficial for helping children’s motor, sensory processing, and academic skills. Therefore, the purpose of evaluating the parent’s satisfaction with the department’s services is to measure the quality of service and plan for future improvement.

METHODS
The study design was non-experimental, descriptive, and cross-sectional. Thirty parents of children with SI problems participated in this study. The children received the SI approach during at least 3 sessions. The participants completed demographic and client satisfaction questionnaires, that included 8 questions with a four-point Likert scale. This questionnaires showed a high level of validity.

RESULTS
The majority of the participants were mothers (66.7%). In addition, most of the participants were university graduates (46.7%), and employed (63%). Children of these parents were mainly males (60%), and were diagnosed with autism (30%). The parents’ satisfaction with the SI services in Kuwait was high (Mean= 3.48, SD = 0.475) out of the highest possible level, which is 4.

CONCLUSION AND DISCUSSION
This study showed that parents of children receiving an SI approach in Kuwait were highly satisfied with this service. In addition, this positive result ensures the quality of services provided by occupational therapists in Kuwait, and highlighted their role in improving the children’s performance. The major limitations of this study were a small sample size and time limitations. In the future, it is suggested that a similar study be repeated in other hospitals, and a better examination of the parents’ satisfaction levels be performed through a qualitative study.
13. Relationship between Upper Limb Dysfunction and Level of Anxiety and Depression among Stroke Patients

Dhuha AlKandari, Rawan AlFadhli, Dr. Mohammed Nadar

INTRODUCTION
Previous studies have examined the impact of stroke on the overall quality of life, anxiety and depression. There was limited evidence addressing the relationship between upper limb dysfunction and level of anxiety and depression in stroke patients. **Objective:** The purpose of this study was to investigate the relationship between upper limb dysfunction and the level of anxiety and depression in stroke patients.

METHODS
59 stroke patients from governmental hospitals (Physical Medicine and Rehabilitation Hospital, Al-Amiri, Aljahra, AlAdan, Mubarak AlKabeer, and AlFarwanya hospitals) participated in the study. Questionnaires that contain demographics, hospital anxiety and depression scale (HADS), and disability of arm, shoulder, and hand (DASH) were distributed to the participants by physical and occupational therapists.

RESULTS
There was a moderate rate of disability in the upper limb as measured by DASH (mean = 54.13, SD=25). The results from HADS indicated that 23.6% of participants had anxiety and 19% had depression. Additionally, 20% of the participants were borderline from anxiety and 19% were borderline from depression. There was a moderate relationship between upper limb dysfunction and depression (p < 0.001, r =0.5) and a weak positive relationship between upper limb dysfunction and anxiety (p < 0.05, r = 0.38).

CONCLUSION
The findings of this study revealed a significant but weak relation between upper limb dysfunction and level of anxiety and depression. It showed that nearly a quarter of stroke patients had anxiety, and a fifth of them had depression. The relationship between upper limb dysfunction and depression was moderate. However, the relationship between upper limb dysfunction and anxiety was weak. This study should be repeated to confirm the prevalence of anxiety and depression among stroke patients with upper limb dysfunction. Future studies should consider a representative number of participants with random sampling to have stronger internal validity of the results.
14. Coping Strategies of Caregivers with an Autistic Child in Kuwait
Anhar AlEnezi and Nasser Al-Otaibi PhD

BACKGROUND
Caregivers of children with autism spectrum disorder (ASD) face a range of challenging circumstances when caring for them. Coping strategies of caregivers of the ASD Children have not been fully investigated in Kuwait. Therefore, the purpose of this study was to explore the coping strategies of caregivers with an ASD child in Kuwait.

METHOD
The study was non-experimental and cross-sectional. Participants were divided into caregivers with non-autistic children and those with ASD children; they were recruited from different hospitals in Kuwait. The participants were assessed using the Brief COPE questionnaire to assess a broad range of coping responses among the study participants. Descriptive statistics were utilized. A T-independent student test was employed to examine the differences between the study variables.

RESULTS
Both groups consisted of 30 caregivers each. Most of the severity levels of ASD participants were mild (33.3) to moderate (43.3). With regards to the caregivers of the ASD children, the results showed that the highest levels of informal support were given by the husband/wife (63.3%), whereas the highest formal support came from governmental financial support (30.0%). It was also found that active coping strategies were significantly different between the two groups (p=0.044).

DISCUSSION AND CONCLUSION
Family support was highly evident among the ASD group; thus, health care professionals are encouraged to provide continuous educational and emotional support to enhance the family’s coping strategies. However, the formal support received was not adequate, which could affect the quality of care provided by the caregivers of the ASD children. Therefore, it is recommended to advocate for maximizing government resources to provide continuous and intensive support for the caregivers of ASD children, which could potentially lead to better coping strategies and management of their children.
Physical Therapy
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1. Functional and Psychological Effects of Chest Pain
   Alaa Alsayyed¹, Ayoub Salem², Dalal Ahmad³, Zahraa Albuloushi⁴
   Dr. Maqdad Taqi

INTRODUCTION
There are several types of chest pain, including cardiac chest pain (CCP) and non-cardiac chest pain (NCCP). Although NCCP patients have low mortality rate in comparison to CCP patients, they suffer from high levels of psychological distress, dysfunction, and impaired quality of life. The aim of this study is to compare chest pain characteristics, levels of psychological distress, and functional status of CCP and NCCP patients.

METHODS
A cross-sectional, non-experimental, and descriptive comparison of CCP and NCCP patients was done on measures of pain, mood, beliefs, and physical symptoms. Hundred participants were recruited into this study divided into CCP (N=50) and NCCP (N=50) both males and females in equal numbers. Questionnaires were used to evaluate patients attending Chest and Mubarak Al-Kabeer Hospitals during a 3-month period. Ethical approval number: 1862

RESULT
After a comprehensive data analysis using SPSS, results showed that NCCP patients (M= 39.44, SD= 12.829) were younger in age than CCP patients (M= 51.76, SD= 10.769). CCP participants showed higher pain severity (M=26.58, SD= 8.018) than NCCP participants (M= 20.98, SD= 7.212). Also, both groups have significant differences in pain characteristics (P< 0.05). In addition, CCP participants showed greater functional disability than NCCP participants P< 0.05, while, both groups suffered from a similar amount of psychological distress (GAD7) P= 0.75 (PHQ9) P= 0.22.

DISCUSSION
The primary strengths of this study include comprehensive questionnaires and wide age range. Whereas including participants with different educational levels is one of the weakness points.

CONCLUSION
Patients with NCCP are as psychologically distressed as patient with CCP. However, pain severity, characteristics, and functional status were different between both groups. Additionally, the study showed that NCCP patients were younger in age.

Abeer AlShaya, Dalal AlSanad, Fajer Burabeea, Taiba AlYaqoub, & Dr. Hesham AlRowayeh

INTRODUCTION
The current physical therapy (PT) management of low back pain (LBP) in the State of Kuwait is not yet clear, despite numerous established protocols worldwide. Therefore, the purpose of this study is to investigate the current PT clinical management of LBP in the State of Kuwait.

METHODS
One hundred and twenty questionnaires were distributed randomly to physical therapists currently working in outpatient or inpatients governmental hospitals by a trained physical therapist between February and April, 2018. The questionnaire included questions about clinical setting, patient information, and treatment intervention. Participants were excluded if they had less than 3 years of clinical experience. Descriptive statistics were used to analyse the data using SPSS-24.

RESULTS
Sixty physical therapists (27 females and 33 males; 20 Kuwaiti and 40 non-Kuwaiti) completed and returned the questionnaire (66.7% response rate). On average, the physical therapists had 40-50% of patients with LBP. The physical therapy treatment most commonly included electrotherapy modalities: superficial heat (96.7%), interferential (93.3%), transcutaneous electrical nerve stimulation (71.7%). Abdominal exercise (80.0%), passive stretching (73.3%) and McKenzie (68.3%) were less frequently used.

DISCUSSION
The management of LBP in the State of Kuwait mainly depends on electrotherapy more intensive training and changes in the protocol of LBP management is a must.

CONCLUSION
Physical therapists in the State of Kuwait lack evidence in their management of LBP.
3. Cervical joint position errors Among healthy and individuals with Chronic Neck Pain versus Healthy

Prof. Saud Alobaidi¹, Latifa Aldhaferi² and Wedad Algallaf³

INTRODUCTION
Chronic neck pain (CNP) a complex mechanosensory problem with significant impact on active range of motion (AROM) and proprioception specifically joint position sense.

OBJECTIVE
To determine the differences in joint position sense among healthy individuals and those with CNP.

METHOD
Design:
A quasi-experiment design was utilized to determine the degree of joint position errors (JPE). The dependent variable was AROM measured by plastic goniometry. The independent variable was pain severity measured on visual analog scale (VAS).

Subjective
A total of 40 CNP individuals and 40 health individuals matched on the basis of age and gender were involved. Subjects were screened and gave their voluntary consent. Movements explored were neck flexion, extension, and rotation as measured by a plastic goniometer, while joint position sense was measured when individuals were instructed to reproduce a predetermined target point on a wall poster were selected using a laser pointer mounted on the individual’s head.

STATISTICAL ANALYSIS
Mean and standard deviation were utilized to describe the variables. Paired t-test was used to compare the JPE between healthy and individuals with CNP. P value was set at P<.05.

RESULT
CNP AROM was as follow: Flexion 38.8, ± 8.20, Extension 44.87, ±6.04, Right rotation 60.57, ±8.09, Left rotation 61, ±6.52. Whereas the AROM of normal individual was: Flexion 41.72 ± 5.36, Extension 44.8, ±6.0, Right rotation 59.15, ±7.08, Left rotation 63.15, ±5.62. The percentage difference of JPE were very large in travers plan the error ranged between 7.5 to 12.33% P< 0.40-0.08 and very minimal in sagittal plan 1% to 2.11% p <0.05-0.97

DISCUSSION & CONCLUSION
Chronic neck pain impact and reduce the AROM and increased the proprioception of joint position sense, this was more pronounced in transvers plan.
INTRODUCTION
In recent years, the use of video games that require movement of the whole body to rehabilitate patients with movement disorders has increased. The aim of this study was to compare the effects of Wii Fit training with conventional physical therapy (PT) program on balance, coordination, walking speed, and fatigue in patients with secondary progressive multiple sclerosis (SPMS).

METHODS
This was a pilot experimental pre- and post-test study. Ethical approval was obtained from the Ethics Committee for Student Research (Project #27). Eight subjects with SPMS were enrolled. Four subjects in the experimental group received 30 minutes of Wii Fit training for balance and coordination in addition to conventional PT. The other four subjects in the control group only received conventional PT. Intervention lasted for three weeks with three weekly sessions. The set of performance-based dependent variables were Mini-BESTest, Four Square Step Test, 10m walking speed, and Heel to Shin. Self reports on balance confidence and fatigue were obtained using the Activities-specific Balance Confidence scale and MS Fatigue Index. Dependent variables were measured before and after the intervention. Absolute Change (Postest - Pretest) and Rate of Change (Absolute Change / Pretest) were calculated. Independent t-test was used to compare group differences in Baseline (Pretest), Absolute Change, and Rate of Change.

RESULTS
The subjects had similar characteristics and the baseline scores of all dependent variables were not statistically significant between the groups. Absolute Change and Rate of Change for the experimental group showed higher improvements than the control group in the scores of all dependent variables. However, group differences reached a level of statistical significance only for the Mini-BESTest and Heel to Shin scores.

CONCLUSION
Preliminary results appear promising. Improvements in balance and coordination as measured by the Mini-BESTest and Heel to Shin were significantly higher in subjects who underwent Wii Fit training. A larger sample-sized study is needed to ascertain the validity of the current results.
5. Head Flexion Angle During Smartphone Use While Texting in Different Postures Among Health Sciences Centre Students in Kuwait
Fatma Alshammari, Farah Zahyan, Jumana Sheer, Maali AlOtaibi, Sameera AlJadi, PhD

INTRODUCTION
Prolonged texting using a smartphone is known to increase head flexion angle, leading to neck pain. However, the amount of head flexion angles varies between posture conditions while texting. Objectives: The aim of this study was to examine the amount of alteration of head flexion angles while texting in three different postures: sitting, standing, and walking over periods of time.

METHODS
Head flexion angles were measured from 35 students using a cervical range of motion (CROM) device while texting in three postures (sitting, standing, walking) after 0, 3, 6, & 9 minutes of texting in the lab.

RESULTS
Head flexion angles were significantly greater in sitting compared to other postures in participants with a history of headache and neck pain. Neck pain using NRS before and after the procedure was significant at p< 0.05.

CONCLUSION
Head flexion angle during texting alters with posture. Texting in a sitting posture resulted in greater head flexion than other postures.
6. A Comparison of Physical Activity Levels Among Physical Therapy Students in Kuwait University

Anfal aladwani, Fajer Alshammeri, Farah AlAbdulrazzaq, Sarah AlShammeri, Dr. Fawzi Bouzbar

INTRODUCTION
World Health Organization (WHO) defines physical activity (PA) as “any bodily movement produced by skeletal muscles that requires energy expenditure including activities undertaken while working, playing, carrying out household chores, travelling, and engaging in recreational pursuits”. However, there is a difference of physical activity levels among senior and freshmen physical therapy students in Kuwait University due to the difference of course materials being taken during the courses. The purpose of this study will assess the levels of physical activity and investigate the impact of course-based materials among freshmen and seniors of physical therapy students in Kuwait University.

METHODS
A total of 60 physical therapy students (30 seniors ranging between 20-23 years and 30 freshmen ranging between 17-19 years) of both genders are randomly selected during the course from the Physical Therapy program at the Faculty of Allied Health Sciences in Kuwait University throughout Quota sampling. In this study, a two-way method will be used: International Physical Activity Questionnaire (IPAQ) and pedometer bracelet. Students with health problems, injuries will not be included in the study.

RESULTS
Our results showed that there is no correlation between Pedometer and IPAQ scores (r = -0.03, p = 0.33), age and PA (r = 0.12, p = 0.24, and body weight and PA (r = -0.03 p = 0.78). Mann-wihitney U and chi-square tests showed that there was significant difference between academic year and PA (p< 0.05).

DISCUSSION
There was a significant correlation between academic year and PA levels. However, pedometer scores were not correlated to the IPAQ scores, which might be due to student’s recall bias.

CONCLUSION
There was an impact of course-based materials on PA of senior students more than freshmen students.
7. The Effect of Conventional Physical Therapy with No Cycling, Stationary Cycling, and Stationary Cycling with Virtual Reality on Decreasing Tremor in Parkinson disease Patients in Kuwait

Alfaily S., Alottaibi N., Aldhafeeri A., and Aldamaj N.

INTRODUCTION
Tremor is one of the main symptoms of Parkinson’s Disease (PD). Tremor can be controlled by many sensory inputs to the basal ganglia. Inputs from vision, vestibular system, and limbs tactile and proprioception to the substantia nigra might help increase substantia nigra activity and decrease tremor.

METHODS
Nine PD patients participated in this study. Subjects were divided into 3 groups (1 Conventional PT group and 2 Experimental). The experimental groups are stationary indoor cycling and indoor static cycling with virtual reality. Subjects were randomly assigned from Kuwait governmental hospitals. Mini Bestest and Fahn- Tolosa-Marin tremor rating scale (TRS) were used to determine tremor severity.

RESULTS
Increase in balance and stability were significant when the two-experiential were compared to the conventional PT group p=0.016. Fahn-Tolosa_Marin test show great decrease in tremor after cycling.

CONCLUSION
Patients using the cycling with VR showed better TRS results than the cycling alone. Sensory inputs to the basal ganglia might help increase dopamine secretion and decrease tremor. Cycling with VR for 50 minutes helped decrease tremor with an effect that can last for 4 hours.
8. The Prevalence of Low Back Pain (LBP) Among Physical Therapists and Radiological Technologists in Kuwait

Shorouq Al-Otaibi, Manar Al-Qattan, Lolwah Al-Sultan, Esraa Dashti, Dr. Raed Al-Saeed

INTRODUCTION
Low back pain (LBP) can be a result of different conditions that effect the bony lumbar spine, the discs between the vertebrae, the ligaments around the spine, the spinal cord, or the nerves and muscles of the lower back. LBP can occur suddenly or develop gradually when the person repeats movements or has bad posture. The most common cause of LBP is muscle strain, which occurs due to lifting heavy objects and other factors. **Objective**: To describe the course of work-related low back pain among physical therapists and radiological technologists who work in governmental hospitals in Kuwait.

METHODS
A self-reported questionnaire, which was taken and modified from a previously published study, was used to determine the prevalence and risk factors of LBP among physical therapists and radiological technologists in several governmental hospitals in Kuwait. The questionnaire included three sections: demographic status, knowledge and awareness about LBP, and history of LBP episodes. SPSS software was used to analyse the data. Ethical approval number: 817.

RESULTS
150 questionnaires were distributed to physical therapists and radiological technologists, 136 (90.6%) responded and participated in this study (47.8% physical therapists and 52.2% radiological technologists). The study showed that the pain experienced while performing risky activities by both occupations is low (mean=1.92 out of 7). It also showed that there was no significant deference between the two occupations in experiencing LBP (m=1.78, SD=2.18, p=0.528). but there was a significant difference between gender (females more than males) in experiencing LBP (female: m=2.44, SD=2.459) (male m=1.41, SD=2.193) (p=0.11).

CONCLUSION
There is no relationship between the occurrence of LBP among physical therapists or radiological technologists in Kuwait. However, there is a significant deference between females and males, with females experiencing LBP more than males.
9. The Perception of Parents About the Postural Stability of Their Cerebral Palsy Child in a Wheelchair While Performing Activities of Daily Living
   Amirah Alrashidi, Nourah S. Almutairi, Nourah M. Almutairi, Zainab N. Borumanah

INTRODUCTION
Cerebral palsy (CP) is the most common type of childhood physical disability. It is a group of non-progressive permanent disorders of motor development and posture, leading to a limitation in activities of daily living (ADL).

PURPOSE
To explore the perception of parents about the postural stability of their CP child in a wheelchair while performing ADL.

METHODS
Parents of 18 children with CP (10 boys, 8 girls; age range 5-14 years) were recruited from the Physical Medicine and Rehabilitation Hospital in Kuwait. The questionnaire used was obtained from a previous study, and it was modified by a pediatric physiotherapist. The questionnaires were then sent to the parents. In this study, a descriptive analysis method (percentage) and Pearson correlation were used.

RESULTS
Forty-four percent of parents identified that their child sits stable in an upright position with symmetrical alignment without having a tendency to fall. About three-fourths (77.8%) of the parents indicated that their child was safe while using a pelvic belt. More than half (55%) of the parents indicated that their child’s therapists informed them about proper sitting postures. There was a significant relationship between the parents’ knowledge of their child’s postural stability in a wheelchair and the tendency of falling (r = 0.21; p value= 0.15), and (r =0.63; p value= 0.02) regarding the physical therapist’s instructions.

DISCUSSION
The importance of a pelvic belt for the postural stability is highlighted through these findings. In addition, more awareness and educational programs should be provided by physiotherapists.

CONCLUSION
The parents stated that the pelvic belt is safer for their child. However, they are not fully aware about the importance of the pelvic belt in the posture stability. These results showed that the physiotherapists instructed them about proper sitting posture in a wheelchair and its components.
10. Test-Retest Reliability of Cervical Proprioception Among Healthy Individuals
Sameyah Al-Osaimi, Sheikha Al-Hazani, and Saud Al-Obaidi PhD

INTRODUCTION
Proprioception is the ability to sense joint position in space. An error in joint position sense can impact balance and joint stability.

PURPOSE
To determine the ability to reproduce a specific target and measure joint position error (JPE) in the frontal and transvers planes.

METHODS
Design: A correlative study to determine the degree of intra-tester reliability of active range of motion (AROM) and JPE. Subjects: 20 healthy individuals chosen based on age gave their consent to participate. Protocol: AROM was measured by one tester with goniometer for rotation and side-bending recording two trials each. JPE was measured using a laser pointer on the head pointing towards a neutral point. Another tester instructed the subject to side-bend his neck 75cm away from the neutral point and then return five times with eyes open, and then, twice while blindfolded and the distant was recorded. The same protocol was repeated for rotation with 25cm. Statistical Analysis: descriptive statistics, mean and standard deviation were used, person product correlation coefficient and interclass correlation coefficient described the consistency of measurements. The p value was set at <0.05.

RESULTS
Good reliability of AROM in frontal and transvers planes as measured by a single tester two trials (r =.80-.99 and ICC=0.80-99 p<0.001). For a single measure vs mean correlation values (r=.90-.99). For JPE the r values for single tester two trials (r=0.44-65 p<0.05 and ICC 0.71-0.99 p<0.00). Low reliability of AROM and JPE was noted at the left Side-bending. The rest of the measurements had strong agreements. The normal subjects’(control) JPE was within 0.2-8cm from neutral with more variation in left Side-binding.

CONCLUSION
Test-retest consistency was significant for all movements, and JPE was minimal among healthy individuals. We speculate that such variation may be exaggerated among patients with chronic neck pain. Taken one or two trials measurements is as good as taking the average of two measurements.
11. The Prevalence of Scoliosis in Female Students of the Health Sciences Center of Kuwait University
Anfal Al-Enezi, Reem Al-Sanea, Wedad Al-Otaibi, Shouq Al-Daham, Dr. Nowall Al-Sayegh

INTRODUCTION
Scoliosis was traditionally thought to develop mainly during the adolescent phase of life. However, research has been reported on older age groups along with follow up periods that show that scoliosis may develop later in life. The aim of the study was to determine the incidence of scoliosis in female students at Kuwait University Health Sciences Center.

METHODS
One hundred and fifty-five female students from the five faculties aged between 18 and 25 were recruited. An intake form was completed, and then an initial visual screening (Adam’s Flexion Test) was conducted. If the test was positive, a final visual screening (Side Flexion Test) to determine flexibility of the curve and leg length discrepancy was done.

RESULTS
Scoliosis was detected in 43 (33.3%) of the participants and an additional screening was performed. Sixteen participants from the Faculty of Allied Health (15 flexible curves and 1 non-flexible curve), 12 from the F (11 flexible curves, 1 non-flexible), 2 from the Faculty of Dentistry (2 flexible curves), and 13 from the FOP (12 flexible curves and 1 non-flexible). Of the 43 (33.3%) participants with a visible curve, 36 (83.7%) were right handed. Most of the participants with scoliosis had a right thoracic spine curve 22 (51.2%) followed by right thoraco-lumbar curve 9 (21%).

CONCLUSION
The results demonstrate that scoliosis is not limited to the adolescent phase of life. The majority of the curves in this sample were flexible curves indicating a need for an increase in Physical Therapy education.
Radiologic Sciences
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1. **Digital Mammography and Digital Breast Tomosynthesis for Detection of Breast Cancer: A Retrospective Study**
   Wafaa Ahmad, Fatima AlAanaze, & Siham AlHajri

**INTRODUCTION**
Breast cancer is the most common malignancy in women, and early detection is essential for its successful treatment. The aim of this study was to investigate the sensitivity and specificity of two methods for early detection of breast cancer: digital mammography (DM) and digital breast tomosynthesis (DBT) in comparison to histopathology.

**METHODS**
The study involved 58 women with 65 breast lesions with each detected by two diagnostic modalities: DM & DBT and subsequently confirmed by histopathology. Breast Imaging-Reporting and Data System (BI-RADS) was used for characterizing the lesions. One experienced radiologist interpreted the two diagnostic modalities.

**RESULTS**
The average age of the women was 48.30 years (range, 26-81 years). There were 34 malignant breast lesions and 31 benign. Kappa test for DM versus DBT for malignant and benign lesions showed weak level of agreement (0.47 and 0.44, respectively). In addition, DM for malignant and benign lesions showed a weak level of agreement with the histopathology report (0.41 and 0.44, respectively). However, DBT for malignant and benign lesions showed a strong level of agreement with the histopathology report (0.97). The sensitivity for DM and DBT was 73.5% and 100%, respectively, while the specificity was 67.7% and 94%, respectively. Receiver operating characteristics (ROC) curve analysis showed an overall diagnostic advantage of DBT over DM with a significant difference between DBT and DM (p<0.001).

**CONCLUSION**
DBT is more sensitive and specific for detecting breast lesions than DM alone.
INTRODUCTION
Ultrasonography has shown a cross-sectional area (CSA) and flattening ratio (FR) of the median nerve (MN) in carpal tunnel syndrome (CTS). The aim of this study was to evaluate the median nerve CSA and FR and estimate the prevalence of CTS in dentists in Kuwait and correlate it to their years of experience and working load per day.

METHODS
Fifty volunteer dental practitioners (25 females & 25 males) underwent a high-resolution ultrasound of median nerve in transverse section at the pisiform bone level and CSA (mm²) and (FR) were measured bilaterally. A CSA of <10mm² is considered normal.

RESULTS
There were 20 (24% females & 56% males) and 19 (32% females & 44% males) volunteer dentists with CSA of >10mm² for right dominant hand and left non-dominant hand, respectively. There were 8 (33% females & 63% males) and 4 (22% females & 25% males) for the 17 symptomatic right hand volunteer dentists with CSA of >10mm² for right dominant hand and left non-dominant hand, respectively. Two-independent t-test showed a significant difference (p=0.23) between the male right dominant hand (CSA mean±SD, 10.6±3.97mm²) than the female right dominant hand (CSA mean±SD, 8.6±1.59mm²). A linear correlation and logistic regression analysis for all volunteers with or without symptoms for both hands showed no significant correlation between CSA or FR for the number of years of experience or the number of working load (p>0.05).

CONCLUSION
Dentists have high CSA & FR but not related to the number of years of experience or number of working hours per day. In this study, the male prevalence of developing at CTS being higher than females may be due to a significance difference in age, height, and the number of years of experience between both genders.
3. Successful Radiography Students at Kuwait University
   Abdullah Mashali, Ahmed Ezzedin, and Shrouq Al-Ramlawi

INTRODUCTION
The manner in which radiographic science students approach their studies is problematic because of a lack of knowledge and awareness of how to appropriately manage their college time. This mismanagement of study time may influence grades, health, and social life. The main aims of this study are to determine how radiographic students deal with their studies given the challenges faced and to help new students cope with the issues that arise through improving their study skills.

METHODS
A questionnaire was distributed to 90 radiologic sciences students, 3 males and 87 females, in their second, third and fourth years in the Faculty of Allied Health Sciences at Kuwait University. Each student’s details and responses were entered in an Excel spreadsheet, and the data was analyzed using SPSS version 23.

RESULTS
The results showed that 80% of students tended to link studied information to specific images or mental maps to better aid memorization. In respect to the impact of physical activity, it was found that a majority of students noticed a link between their physical wellbeing and overall mental health. It was also noted that 85% of students suffered from sleep disorders because of the academic schedule and course load.

DISCUSSION AND CONCLUSION
The success of radiologic students in their studies was found to have been impacted by their ability to appropriately manage their college life. Therefore, adopting an appropriate learning style, improving physical health, and having enough sleep may help radiologic students achieve greater success during their academic studies.
4. The Reasons Why Women Refrain From Mammography Screening
Hadeel Al-Jarallah

INTRODUCTION
Breast cancer is the most common type of cancer diagnosed in women and has a high mortality rate. It cannot be prevented, but its prevalence can be reduced by early detection and treatment. Mammography is the most effective way for early detection. Mammography is not a new screening method and is widely available in Kuwait hospitals. Women who are over the age of 40 years and those who are more susceptible to having breast cancer should undergo annual mammography screening. Despite the benefits of mammography, some women still refuse to undergo it. **Objective:** The aim of this study was to reveal the reasons behind the refusal of some women to undergo mammography screening and to examine the awareness of women's knowledge of its importance.

METHODS
A total of 150 questionnaires were distributed among women above 40 years in Kuwait.

RESULTS
Seventy-three percent of participants were familiar with mammography and knew its importance and its effectiveness in early detection. Although the number of women who have poor knowledge of mammography is far less, we should concentrate on increasing their knowledge and awareness. Higher levels of awareness and knowledge about mammography were reported among women with demographic characteristics such as education and having a family history. Sixty-nine percent of participants know when to undergo mammography screening, while the rest have no idea. Almost half of the participants think that mammography is painful and embarrassing. Most non-Arab women think that it is expensive.

CONCLUSION
Awareness about the importance and effectiveness of mammography should increase, and the information about it should be clear and comprehensible. The importance of such studies and research are not clearly understood so that 40% are not interested in participating in future.
5. The Effect of Using Diuretics in Ga-68 PSMA Imaging
Maha M Al-Otaibi, Fatma Dashti, Layla Ali, PhD

BACKGROUND
Since the introduction of the Ga-68 labeled prostate-specific membrane antigen (PSMA) as a PET ligand to image patients with prostate cancer, different procedure protocols have been developed to optimize image quality. In some clinics, a diuretic (furosemide) is injected to clear the activity from the bladder and urinary system, which is the main excretion route of Ga68-PSMA. The impact of this patient preparation has not been investigated before. Therefore, our study aims to evaluate the image quality and lesion detectability in the pelvis region obtained pre and post diuretic administration.

METHODS
A standard Ga-68 PSMA imaging was done for 25 patients. After that, a diuretic was injected according to the weight of the patient and image acquired 15 minutes post Lasix. After the image reconstruction, ROI was placed over the lesions and background to calculate lesion contrast, image CNR and SUVmax. Subjective evaluation was done by two experienced NM physicians using 3 scoring grades.

RESULTS
Diuretics can clear any activity that appears in the urinary system. The amount of noise was significantly decreased in the lesions and background by 35.2% (range, 8%-62.3%), p value<0.0001 and by 52.6% (range, 24.4%-91.2%), p value <0.05, respectively. The CNR was significantly improved by 49.6 %±24.5, p value =0.02. The average score for observer one was 2.4 ±0.71 and observer two 2.53±0.52 with substantial agreement (κ=0.76). Both observers were in favor of using both pre and post Lasix to further delineate the lesions.

CONCLUSION
The clearance of bladder and ureter activity lead to better delineation of lymph nodes and prostate lesions. Therefore, diagnostic accuracy was improved by using diuretics.
6. Radiation Dose and Risk Awareness Among Junior Doctors
Huda AlHarbi, Lolwa Almosawi, Dalal Alawadhi, and Ghadeer Albaloul PhD

INTRODUCTION
Diagnostic radiology is an important part of the diagnostic process. Health care practitioners should receive adequate training and teaching in radiation protection and safety due to the biological effects that radiation could lead to. **Aim** To identify the level of knowledge of radiation among junior doctors and to determine whether there was a justification of requests, and if the test was necessary for diagnosis.

METHODS
There were 110 participants. A questionnaire with 27 items focusing on junior doctors was used. The questionnaire was also given to senior doctors as way to compare results. The study was carried out in main hospitals in Kuwait. SPSS and Excel were used to analyze the data. Data was collected over a period of 4 weeks.

RESULTS
Results showed that 23.6% of all doctors considered the MRI as an ionizing radiation. When matching experience with understanding of MRI, 29.2% of doctors with one and two years of experience considered the MRI as ionizing radiation modality, while 70.8% of them considered it as non-ionizing. Doctors with more than four years of experience (17.4%) considered the MRI as an ionizing radiation modality, while 82.6% considered it as non-ionizing. More than 65% of the doctors felt that they did not get enough teaching regarding radiological procedures, and 55% admitted they requested radiologic examinations for patients who they did not examine. Only 61.8% of all doctors knew the risk of ionizing radiation, and 38.2% did not.

DISCUSSION
This study provided a review of literature regarding awareness of radiation risks to provide guidance for communicating potential risks with patients. Adequate knowledge of basic principles of radiation dose will improve a doctor’s awareness of radiation risks, especially junior doctors who do not have adequate information about radiation due to their lack of experience in comparison to senior doctors. This resulted in an increased number of unnecessary requests. With more experience, doctors get more information regarding radiology, which decreased requesting unnecessary examinations.

CONCLUSION:
There is a lack of guidance in the process of requesting radiological examinations. Therefore, it is important to provide training and increase awareness about the process of radiation in the initial stages of one’s career.
7. The Effect of Image Reconstruction Method on Accuracy of CT numbers
Mariam Salem Almudej, Shahad Maashi Alruwaili,
Shoug Waleed Alnajem, Dr. Ajit Brindhaban

INTRODUCTION
The filtered back projection (FPB) and iterative reconstruction (IR) techniques are used in Computed Tomography (CT) imaging. They differ mainly in the application of the filter in FPB, which introduces extra image noise. The IR techniques allow the images to be acquired with reduced patient radiation dose. The aim of this study was to investigate any changes in CT numbers for different tissues when the images were reconstructed by the two techniques and to check for any kV dependence.

METHODS
An electron density phantom, with inserts representing different types of tissues, was scanned on a General Electric CT scanner for axial images using 80 kV, 100 kV, and 120 kV while the mA and gantry rotation time were constant. The images were reconstructed using FBP, 30% IR, 60% IR, and 90% IR at each kV. The image analysis ImageJ measured the mean CT number and its standard deviation in regions of interest. The mean CT number for the different kV images was compared using Kruskal-Wallis test at p=0.05. The dependence of CT number on kV was tested using 1-way analysis of variance (ANOVA).

RESULTS
There were not any statistically significant differences in the CT number among the different reconstruction techniques within a single kV acquisition (p>0.099). However, CT numbers in most tissue increased with decreasing kV (p<0.001) but was found to be a constant for lung tissue.

DISCUSSION & CONCLUSION
This study found that the CT numbers of all tissues do not depend on the image reconstruction technique, but as the kV increased 80 to 120, the CT number decreased by 20-30% for bone, fat and liver tissues.
8. Evaluation of Image Quality in PET/CT Using Q.clear Algorithm (Phantom Study)

Huda Al-Herz¹, Mariam Al-Enzi² and Ashwaq Alrasheedi³

INTRODUCTION
PET is a powerful method of imaging biochemical procedures inside the body. In order to have better image quality and resolution, PET images are reconstructed. Iterative reconstruction is the technique of choice. The Q.clear software has been introduced in PET. This technique results in noise suppression, image quality enhancement and lesion detectability.

METHODS
An image quality phantom from the National Electrical Manufacturers Association (NEMA) was scanned (GE Healthcare) to assess image quality. Distinctive parameters were used: spheres to BKG ratio (2:1 / 4:1 / 8:1), acquisition time and penalty function Beta (β) 200 to 500. Images were reconstructed by both OSEM and OSEM with Q.clear for comparison in lesion contrast and SUV quantification between the two algorithms. The best penalty of Q.clear to be used was assessed.

RESULTS
With a Q.clear ratio of 2:1 there was an insignificant increase in contrast and SUVmax p value of (0.06). In addition, there was a decrease in lesion detectability for both (v=13 mm) and (v=10mm) unless with 8 time/bed lesion of 13mm was visualized. SUVmax was significantly increased in p value 0.001 at 4:1. The optimal beta used was B400 because of the contrast enhancement (p value 0.047) and minimal increase of noise (12%-14%). In comparison, noise increased approximately (47%-50%) and (28-31%) on b200 and B300 respectively. There was an insignificant increase in contrast and SUV max (p value 0.07). Noise decreased significantly on 2:1 and 8:1 with p value (0.001), whereas signal to noise ratio was significantly higher with Q-clear in all ratios.

CONCLUSION
The conclusions have to be based on the data presented and should be limited to minimal speculation concerning the significance of the work.
9. Increasing the Awareness of Breast Cancer in Men in the State of Kuwait
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Raed AlSaeed, PhD

INTRODUCTION
Male breast cancer (MBC) incidence is 1% of all breast cancers and is increasing annually. Breast cancer is often diagnosed at more advanced stages in men, in contrast to women. Its rarity among men, as well as the lack of awareness, leads to its detection at later stages. The aim of our study is to increase the awareness and the knowledge about this disease and the risk factors in the state of Kuwait.

METHODS
A questionnaire was distributed to 200 male participants who live in Kuwait in order to assess the level of awareness and knowledge of MBC in Kuwait and its risk factors. The questionnaire used to collect the required information from the participants included four sections 1) demographic status, 2) knowledge about male breast cancer and its risk factors, 3) signs and symptoms of the disease and 4) general knowledge about self-examination and the preferred modality for detection of MBC.

RESULTS
The majority of participants 64.8% mentioned that they had never heard about male breast cancer before. They also believed that the family history and genetic factors will increase the incidence of male breast cancer. Approximately 60% of the participants mentioned that abnormal breast enlargement is the main symptom of breast cancer in men. Half of the participants, 52.3%, mentioned that they do not know about self-examination.

CONCLUSION
Misconceptions about MBC were evident in our results. Therefore, special attention should be given to educating men about this disease.
10. Awareness of Radiation Protection among Healthcare Practitioners in Kuwait
   Abdulrahman Yousef, Ghadeer Abu Yassen, Wadha Al-Daihani,
   Ghalyah Al-Enezi PhD

BACKGROUND
Radiation protection is a field specialized in protecting patients, personnel, and the general public from unnecessary exposure to ionizing radiation. A better knowledge of radiation protection issues becomes an important element of professional expertise not only for radiologists and technicians, but for other medical specialties as well. **Aim:** of this study was to evaluate the awareness of radiation protection issues and the knowledge of radiobiological effects among medical staff in selected hospitals in Kuwait.

METHODS
The participants were 170 medical staff from Al-Farwaniya, Al-Jahrah, Al-Adan, Al-Ameri, Al-Sabah, and Mubarak Al-Kabeer hospitals. They were from different departments, Radiology, Orthopedic, Urology, and Emergency. Participants were asked to fill out a questionnaire about their profession, department, qualification, work experience duration and continuing education experience. The question survey was designed to measure the level of awareness about radiation and radiobiological effects by addressing the following issues:
- the most sensitive organ to ionizing radiation
- modality that is contraindicated to pregnant women
- highest dose modality
- Patient sensitivity to ionizing radiation

Statistical Package for the Social Sciences (SPSS) software was used to analyse the data.

RESULTS
The overall finding of our results showed that physicians and health technologists/technicians revealed similar knowledge of radiation protection issues (65% vs. 63% respectively). The nurses' knowledge was significantly worse among health practitioners as only 30% of their answers were correct. Results showed that 84% of the participants were able to identify that a CT has the highest dose modality. The question about the effects of radiology was answered correctly by 60% of the participants. When asked what the contra-indicated test for pregnant women was, 64% of the participants answered correctly. Results showed that only 16% knew that female babies were more sensitive to ionizing radiation.

DISCUSSION
Our findings indicated that the knowledge of healthcare practitioners about radiation protection issues was significantly poor. Courses on radiation protection and biological effects should be included as a part of the training program to increase awareness of safety protocols. Understanding the concept of radiation protection would also help practitioners be able to overcome their fear of radiation exposure.

CONCLUSION
This study illustrates that protection against ionizing radiation continues to be an essential problem amongst healthcare practitioners. There is limited knowledge of radiation protection among medical staff, which is very dangerous. Denying radiation safety may put both practitioners and patients at risk of an increased exposure to radiation hazards. Education in the field of radiation protection needs to be effectively implemented as part of the practitioners’ continuing education program.
11. Myocardial Perfusion Imaging and Coronary Calcium Score in the Detection and Evaluation of Coronary Artery Disease

Retaj Al Harbi and Mariam Abdulnabi

BACKGROUND
Coronary artery calcification (CAC) is a marker for coronary atherosclerosis, but it does not correlate well with stenosis severity. On the other hand, Myocardial Perfusion Imaging (MPI) is a non-invasive method used to evaluate the perfusion to the myocardial muscle. Both of these methods have their own advantages and limitations. This retrospective study evaluated clinical cases where the diagnosis from coronary calcium scoring (CS) and nuclear medicine Stress-Rest scan MPI were compared for the diagnosis of coronary artery disease (CAD).

METHODS
A total of 18 patients who had already undergone Single Photon Emission Computed Tomography (SPECT) MPI and evaluation of CAC score by CT were randomly selected. The MPI images were analyzed, using 4DSPECT program, to obtain the Sum Difference Score (SDS). Calcium scores were quantified by the Agatston CAC score from the Computed Tomography (CT) images. CAD classification from SDS and CS were compared using Wilcoxon Signed Rank test at p= 0.05 level.

RESULTS
Two of the 18 patients had reversible effects on MPI and were excluded from any further analysis. Significant differences were observed between MPI classification and CS classification of CAD (p=0.035), with CS indicating more severe CAD than predicted by MPI. Eight of the 16 patients had moderate or higher CAD from calcium scores, but milder CAD from MPI. Two patients showed higher CAD classification from MPI over CAC scores.

CONCLUSION
The CAC calcium scores may provide incremental diagnostic information over SPECT/MPI results for identification of patients with significant CAD who may return a negative MPI result.
12. Evaluation of Image Quality for Fatty Breast Using Various Filters and Exposure Factors
Fatma Alrashidi, Fayza Almutairi, Mariam Alenzi, and Khaled AlKhalifah PhD

INTRODUCTION
A study was carried out to compare image quality by measuring between silver and rhodium filter materials for 20% glandular tissue and 80% fat tissue.

METHODS
A digital mammography unit was used with Tungsten (W) target, and Rhodium (Rh) and silver (Ag) filter materials with Amorphous selenium (a-se) detectors. The tissue-equivalent mammography phantom was used, 6cm thick 20% gland/80% adipose. kvp was used manually i.e. 28,30,32, and 34 with AEC, eight exposures for 2 different filters. Three ROI for SNR were selected from each image. Then the average was taken. The CNR was measured from one step wedge in the phantom minus three areas in the background. The data were analyzed using the SPSS nonparametric test using the Kruskal-Wallis and Mann-Whitney test.

RESULTS
CNR for 34 kVp Rh and Ag filter is better for other kvp’s and provides a significant P<0.05. However, there were not any significant changes in SNR for various kvp’s with Rh and Ag Filters P>0.05. 28, 30, 32, and kvp’s between Rh and Ag Filters CNR is better in Ag compared to Rh P= 0.05, while there were no significant changes in the SNR P >0.05. It is shown that 34 kvp Ag filter is the best result in CNR and bot in SNR. The MGD Ag is 60% less compared to the Rh filter for 28 kvp, while 30 kvp 55% is less than the Rh filter, 55% less in 32 kvp, and 34 kvp 62% is less in MGD from Rh filter.

CONCLUSION
It is recommended to use 34 kvp and Ag filter for thick breast 20% glandular, 80% fat, rather than use a full automatic option on the system. This gives the best CNR and a reduction of patient breast dose by 62% as compared to the Rh filter with a dose of 0.56mGy.
13. Radiation Awareness Among Non-Radiology Staff  
Mariam Rabeei, Othman Al-Saeed, Al-Rawn Al-Khaldi, and Ebtehal Al-Qattan

INTRODUCTION
Several initiatives have strived to increase awareness of the Emergency Department’s (ED) medical staff regarding the radiation doses and associated cancer risks to which the patients are exposed due to radiological diagnostic procedures.

The aim of this study was to measure and check the awareness of the physicians, nurses and receptionists in the ED regarding the radiation doses associated with cancer to which the patients are exposed due to radiological diagnostic procedures.

METHODS
A sample size of 61 subjects was taken from the EDs of four general Kuwaiti hospitals. The study included physicians, nurses, and receptionists. A questionnaire was used to assess their knowledge about radiation exposure. SPSS software (V.25) was used for data analysis. The tests for analysis were frequency test, correlation, K-W test, and Mann-Whitney test.

RESULTS
70.5% of the participants lacked information regarding the dose imaging procedures; this is related to inadequate informational courses received at the hospitals. According to this study, 6 (25%) nurses answered incorrectly about the patient dose for lumbar spine lateral in the rate of zero (%). Moreover, 6 (35.25%) receptionists answered incorrectly about the patient dose for thoracic spine lateral question rate of zero%. However, 18 (90%) ED physicians answered correctly about the patient dose for pelvis AP with rate of 100%. Furthermore, 50(81.96%) of participants correctly answered about the lifetime risk of inducing fatal cancer from brain CT.

DISCUSSION AND CONCLUSION
The study highlights the lack of knowledge in the general population and the limited information delivered by the ED medical staff regarding the risks associated with radiation exposure from imaging tests. The awareness of radiation exposure was lower in receptionists compared to physicians and nurses. The ED medical staff should receive continuing education courses provided by the administration under the umbrella of MOH regarding radiation exposure and cancer risks associated with various diagnostic radiological methods.
14. Alzheimer Imaging Options in Kuwait
Bashaer Abdulrahman Alazmi, Shyma Mostafa Othman, Fatma Faleh Alanzi, Dr. Mahmoud Boshehri

INTRODUCTION
The increasing prevalence of Alzheimer’s and the devastating consequences that can eventually lead to death make early detection of this disease critical. Alzheimer’s disease (AD) can be detected using both MRI and PET with each providing different information. Atrophies can be detected by MRI, but amyloid plaques are detectable with PET. This research attempts to examine the imaging protocols utilized for detecting AD in Kuwait.

METHODS
Neurologists (n=20) from public and private hospitals in Kuwait were asked to complete a questionnaire. Participants were required to sign an ethics consent form prior to answering the questionnaire.

RESULTS
Seventy percent of respondents used only MRI, 30% made use of a combination of MRI and PET, and none of the respondents used PET alone, which indicates that the neurologists prefer using MRI over either PET or a combination of MRI and PET.

DISCUSSION & CONCLUSION
A majority of the neurologists who completed the questionnaire are not aware of the importance of using both systems in detecting AD.
15. Job satisfaction among Nuclear Medicine technologists in Kuwait Hospitals
Maha Barez ALhuseni, Shiama Eid AlDhafiri, Amna Abdulrheem AlAmer,
Dr. Nadia Hadi PhD

INTRODUCTION
The profession of Nuclear Medicine is a subspecialty of radiology. This department depends on the relationship between nuclear medicine technologists and nuclear medicine physicians. Job satisfaction in health care is an important factor to solve the problem of shortage in productivity in health care. Aims: to assess job satisfaction of Nuclear Medicine technologists (NMTs), and cover the factors that affect job satisfaction.

METHODS
The participants in these questionnaire were 36 technologists. A survey was designed and distributed to a group of nuclear medicine technologists among all centers in Kuwait centers. The questionnaire included 81 questions divided in 9 categories.

RESULTS
The findings of our study indicated that job satisfaction levels among nuclear medicine technologists in Kuwait hospitals is close to each other. Overall job satisfaction in all young workers is high. There was a low satisfaction with personal income in all professional groups in nuclear medicine department. There was an increased level of stress when working the afternoon shift without consideration for the balance between life and work, which made the Nuclear Medicine technologists dissatisfied with their jobs. The relationship between technologists and their supervisors can affect job satisfaction. Hence, an unhealthy relationship can cause job dissatisfaction as suspected.

CONCLUSION
The study shows that the limitation and turnover in nuclear medicine department were related to many reasons. In general, radiation safety is the main health issue of concern to NMTs, particularly female NMTs. Also, NMTs with different years of experience have different attitudes toward this issue. The study focused on the positive aspects of job satisfaction, achieving hopes, improving retention by enhancing the job resource and improving nuclear medicine department.
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