College of Pharmacy Research Day 2021

Abstracts Book

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بسم الله الرحمن الرحيم

Contents

Dean Message

Dr. Najla Abdullah Altwaijry, MSc, PhD, Assistant Professor in Pharmaceutical Sciences, Dean of the College of Pharmacy, PNU.

Welcome to the College of Pharmacy Annual Research Day, which is designed to showcase the graduation research project by providing our students with a platform from which to share the outcomes of their research.

In the college of pharmacy at PNU, we aim to provide our students with the fundamental principles and skills in conducting pharmaceutical research and therefore, a longitudinal research projects were assigned for interns to conduct. Building a scientific research skill is actually the ultimate goal required from such projects, these skills will support our graduates to become self-learners and thinkers who will always strive to find answers for their enquires through robust research methods and be able to complete original scientific studies in order to shape the future of pharmacy practice and improve the quality of life for all patients.

Following the 2030 vision in improving individual health care, our role as a health academic system lies in focusing our research towards supporting these trends as a national duty and therefore, the College of Pharmacy focus on impacting the society health through creating a research environment that is supportive for our research priorities on disease management, medication safety, in addition to the best practices in pharmaceutical services and drug development projects to ensure scientific and professional excellence.

Finally, I would like to take this opportunity to congratulate all my students for their great work. I would like as well to express my gratitude for the research day committee for organizing the event and the panel of experts who have participated as evaluators.

Message from the Vice-Dean of Graduate Studies and Scientific Research

Dr. May K. Almukainzi, *BPharm, MSc, PhD.* Assistant Professor in Pharmaceutical Sciences

The research project is a required course for our students in their final year of the PharmD program. These projects aim to teach the students fundamental research knowledge such as research ethics, scientific writing, data collection, analysis, and interpretation.

Besides, it develops some essential skills like problem-solving, teamwork and time management. With this knowledge and skills, we have the reason to be excited and confident about the future of scientific research and pharmaceutical care that will be provided by our PharmD graduates.

We are proud of our 2021 graduates who are presenting their researches in this abstracts booklet. Despite the pandemic conditions that we are going through, our students have put a lot of effort to complete their researches projects.

This could not be done without the grace of Allah first, then the supervision of our faculty members, and the cooperation from our partners' institutions. On behalf of the Research Day committee 2021, I want to thank the college administration , the panel speakers, the faculty supervisors, the external advisors, the judges' evaluators, the sponsor, and the students who participated and supported this event

PHARMACY RESEARCH DAY

Message from Director of the College of Pharmacy Research Center

Dr. Aisha Ali Al Sfouk, MSc, PhD, Assistant Professor in Medicinal Chemistry, Director of the College of Pharmacy Research Center

College of Pharmacy's annual research day is an event designed to show the variety and quality of research talking place at the College of Pharmacy. It provides an opportunity to our students to present their research and celebrate their scientific achievements.

At Princess Nourah Bin Abdulrahman University, College of Pharmacy we appreciate the importance of creating an encouraging environment for research. This reflects on the quality and scope of the research projects undertaken by our students as part of their PharmD curriculum activity during their last year. This journey will provide our students with self-learning, critical thinking, team working and innovating research experience.

The 2021 College of Pharmacy Research Day Committee

• Dr. May K. Almukainzi	*Chair*
• Dr. Aisha A. AlSfouk	*Member*
• Dr. Ghadah H. Alshehri	*Member*
• Dr. Hadeel F. Alotaibi	*Member*
• Dr. Areej Elqsaby	*Member*
• Ms Alaa A. Alhamdi	*Member*
• Ms Raneem Alzeer	*Member*
• Ms Lama Almutairi	*Member*
• Ms Muneerah Alhushani	*Member*
• Ms Ashjan Alonazi	*Member*
• Ms Nouf Albuti	*Member*

PHARMACY RESEARCH DAY

Graduation Research Projects Statistics for 2021

Research Project

27

Internal Supervisors

22

External Supervisors

18

Research Sites

8

Scientific Conference Poster and Oral Participation

18

PHARMACY RESEARCH DAY

Sites of Collaboration

مستشفى الملك فيصل التخصصي ومركز الأبحاث
King Faisal Specialist Hospital & Research Centre
Gen. Org. مؤسسة عامة

مستشفى الملك عبدالله بن عبدالعزيز الجامعي
King Abdullah bin Abdulaziz University Hospital
Princess Nourah bint Abdulrahman University جامعة الأميرة نورة بنت عبدالرحمن

مستشفى قوى الأمن
SECURITY FORCES HOSPITAL

مدينة الملك فهد الطبية
King Fahad Medical City

د.سليمان الحبيب
DR SULAIMAN AL HABIB
medical group المجموعة الطبية

جامعة الأميرة نورة بنت عبدالرحمن
Princess Nourah bint Abdulrahman University
مركز أبحاث العلوم الصحية
Health Science Research Center

Pharmacy Research Day 2021
Guest speakers

Prof. Alex Mullen

Chief Scientific Officer, BDD Ltd, Glasgow, UK.
Professor in Drug Delivery, Strathclyde Institute of Pharmacy and Biomedical Sciences, University of Strathclyde, Glasgow, United Kingdom

Dr. Muhammad Hadi

Associate professor in Pharmacy Practice and Policy at University of Birmingham, Birmingham, United Kingdom

Dr. Amani S. Alqahtani

Senior Researcher and Director of Research Department at the Saudi Food and Drug Authority , Riyadh, Saudi Arabia
PhD in Public Health and Epidemiology from University of Sydney

Dr. Hesham Alsaab

Assistant Professor of Pharmaceutics and Pharmaceutical Technology at Taif University, Saudi Arabia

PHARMACY RESEARCH DAY

جامعة الأميرة
نورة بنت عبدالرحمن
كلية الصيدلة

2021

Research Abstracts

PHARMACY
RESEARCH DAY

Abstract 1:
Biological evaluation of CDK9 / CDK2 selective inhibitors as novel anticancer drugs to treat colorectal cancer

Students names: Elham Kasab, Wafa AlHarbi,
Supervisors Names: Najla Altwaijry [a] Alaa Alhamid[a] , Hanan Henidi[b]

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Colorectal cancer is the second leading cause of death among cancer types worldwide [1], Cyclin-dependent kinases (CDKs) inhibitors have promising therapeutic potential to treat different types of cancer including colorectal cancer, and that is because of their role in cell cycle transcription which makes it a potential target for colorectal cancer treatment [2].
Seliciclib is an anticancer agent in phase II clinical trials as CDKs inhibitor [2]. A previous work by the research group successfully synthesized novel derivatives of Seliciclib [3], some of these novel derivatives showed favorable preliminary selectivity to CDK2 or CDK9. The objectives of these study are that in vitro evaluating these compounds for their anticancer efficacy against colorectal cancer cell lines (HT-29 and HCT-116) and compare their effect with other potent selective CDK2 and CDK9 inhibitors. The therapeutic effect will be measured by examining the antiproliferation effect of these compounds followed by the cell cycle arrest assay and investigating the death mechanism through apoptosis assay. The results demonstrate that, compound 3j showed the most significant cell viability reduction by 6 folds compared to Seliciclib in HT-29 cell line and significant increase in the apoptotic cell population with P value 0.0254 compared with Seliciclib in HCT-116 cell line. Similarly, compound 3i resulted in reduction in the cell viability by 3 folds compared to Seliciclib. In cell cycle arrest both compounds 3j and 3i were arrest in G2/M phase for both cell lines. In conclusion, significant cytotoxic effects in colorectal cancer cell lines and major improvement in apoptosis effect and cell cycle arrest at the G2/M phase were detected compared to the positive control "Seliciclib" that demonstrate the modified derivative of Seliciclib 3j as a promising anticancer drug.

Abstract 2:
Evaluation of Saudi Community Pharmacists' Job satisfaction: An Explanatory Sequential Mixed-method Study

Students' names: Abeer Nuhayd and Shroog Almotairi.
Supervisors Names: Alnada Ibrahim [a], Najla Altwaijry [b].

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[b] **Department of Pharmaceutical Sciences, College of Pharmacy, Princess Nourah bint Abdulrahman University, Riyadh, Saudi Arabia**

Introduction: For pharmacists, it has been previously reported that job satisfaction has its impact in reducing dispensing errors, improving patient outcomes, reducing intention to leave the career, and improving organizational commitment. On the other hand, poor job satisfaction has been found to be directly associated with incorrectly filling prescriptions, poor patient counseling, not detecting drug interactions, and could cause patient harm or even death.

Objectives: to evaluate the levels of job satisfaction, and related factors, among Saudi community pharmacists.

Methodology: a cross-sectional study using a mixed-study approach was performed. The first phase involved an online survey to gather information about community pharmacists' job satisfaction and the related factors. The second phase applied a qualitative method using semi-structured interview to more understand the different aspects of job satisfaction. Ethical approval was obtained from IRB - Princess Nourah University.

Results: 130 Saudi community pharmacists responded to the survey. Of the participants, 50% were males, 70.8% in the age group of 25-35 years, 54.6% work in Riyadh region, 82.3% work in chain Pharmacy, and 76.2% have a salary in the range of SAR 5000 – 10000. Concerning the satisfaction aspects, 40.8% were satisfied with physical working conditions and environment, 39.2% with accomplishment from the job, 23.1% with salary, 25.4% with hours worked, 31.5% with opportunity for career advancement, and 44.6% with Recognition from the patient/ community. Among the reported barriers towards career development were Lack of time for development (28.5%), Workload (38.5%), and lack of training (20%). Qualitative interview further explored how pharmacist feel about their career.

Conclusion: varied level of job satisfaction was reported. Some aspects need to be addressed for more involvement of the community pharmacists in the healthcare system.

Abstract 3:
Community Pharmacists' Experience and Beliefs Towards Providing Pharmacy Services to Deaf and Hard of Hearing Patients: A Mixed-Method Study in Saudi Arabia

Students names: Alanoud Alsantly, Dhay Alfaran, Maha Alenezi, Raghdah Almutairi
Supervisors names: Alnada Ibrahim [a], Areej Algadeer [a]

[a] **Department of Pharmacy Practice, College of Pharmacy, Princess Nourah bint Abdulrahman University, Riyadh, Saudi Arabia**

Background: Provision of any pharmacy services to patients requires the pharmacist to well communicate with the patients. Research has shown that healthcare providers face many challenges while providing health care services to patients with audio-logical disability, and community pharmacists are not far from this scope while communicating with Deaf and Hard of Hearing patients.

Purpose: To explore community pharmacists' experiences in providing pharmacy services to Deaf and Hard of Hearing patients in Saudi Arabia, and to investigate the barriers they face when communicating with this category of patients.

Method: This study used a sequential explanatory mixed-method approach. At first, a web-based, self-administered survey was disseminated to community pharmacists in Saudi Arabia. Subsequently, semi-structured telephone-based interviews were conducted with a consented group of community pharmacists.

Results: A total of 175 community pharmacists completed the survey, and 29 (16.8%) were interviewed. The number of Deaf or Hard of Hearing patients the pharmacists met during the past year were as follows: 68 (38.9%) pharmacists met 1-2 patients, 71 (40.6%) pharmacists met 3-4 patients, and 19 (11%) pharmacists met ≥ 5 patients. Forty participants (22.8%) reported that they have basic Saudi sign language knowledge. The services the pharmacists provided to the patients included: prescription medication dispensing (by 82.9%), counseling on prescription medication (by 56.6%), OTC medication dispensing (by 54.3%), and counseling on OTC medication (by 52.6%). One hundred and one (57.7%) of the pharmacists believed they have handled communication barriers appropriately, while 61 (35%) acknowledged unmanageable communication barriers. The two main themes emerged from interviews were: (1) Experience; interviewees preferred written communication with Deaf and Hard of Hearing patients regardless of their literacy level, while spontaneous hand gesturing was the least preferred method of communication. (2) Beliefs; interviewees acknowledged the importance of learning Saudi sign language and suggested strategies to improve hearing-impaired patients' access to pharmacy services.

Conclusion: When providing pharmacy services to Deaf or Hard of Hearing patients, community pharmacists encountered multiple barriers. These barriers need to be addressed for better support and provision of pharmacy services to this special need category of patients.

Abstract 4:
The Efficacy of Ceftazidime/Avibactam Hospital-Acquired and Ventilator-Associated Pneumonia in Patients Receiving Renal Replacement Therapy, Retrospective Study

Students names: Malak Alanazi, Rawan Alsalhabi,, Shatha Almotairi, Maram Alharbi
Supervisors names: Sumaiah J. Al-Arfaj [a], Khalifah Al-Thiab [b]

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Introduction: Ceftazidime/Avibactam (CEF/AVI) is a treatment option for Hospital-Acquired and Ventilator-Associated Pneumonia due to multidrug resistance organisms. Both CEF/AVI are excreted mainly by the kidneys which mandate dose adjustment in patients with renal impairment. Limited data available about the use of CEF/AVI in patients receiving renal replacement therapy (RRT). The aim of the study is to evaluate the clinical outcomes of different CEF/AVI doses used to treat HAP/VAP in adult patients receiving RRT (HD or CRRT).

Method: A retrospective study that was conducted at King Abdulaziz Medical City in Riyadh, from June 2017 till June 2020. Recruited subjects were distributed based on 4 different CEF/AVI dosing regimens into 0.94 gm q24hrs (HD1), 0.94 gm q48 hrs (HD2), 1.25gm q8hrs (CRRT1), and 2.5 gm q8hrs (CRRT2). Clinical Response was evaluated at days 7, 14, 21and 28 from the initiation of CEF/AVI. Nonparametric test was used for the analysis.

Result: This study enrolled 30 patients (median age 68.5 (61.3-79.0) years; 8 [27%] women). Overall response rate was 66.7% in all subgroups. About 63.3% of the study sample developed bacteremia. Approximately 70.6% and 92.3% needed extra antibiotic coverage in HD and CRRT groups, respectively. The response rate in HD1 and HD2 was 78.6% and 100%, respectively but did not exceed 50% in any of the CRRT subgroups. The main causative microorganism associated with respiratory cultures was carbapenem-resistant Klebsiella pneumoniae accounting for 63.3% of all the pneumonia cases.

Conclusion: CEF/AVI use for HAP/VAP in patients receiving (RRT) might be limited by the type of (RRT), the dose used, resistance patterns of the microorganisms and associated gene mutations, comorbidities and the severity of the disease.

Abstract 5:
Evaluation of overtreatment and hypoglycemia in elderly Saudi patients with Type 2 Diabetes mellitus

Students names: Ghadeer A. Al-Qahtani, Lara M. Al-Mutlaqah, Raghad Y. Al-Harbi, Rahaf A. Al-Bluwi
Supervisors names: Sumaiah J. Al-Arfaj [a], Khalifah Al-Thiab [b], Maha Al Ammari [b]

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[b] **King Abdulaziz Medical City, Riyadh, Saudi Arabia**

Introduction: Elderly patients with type 2 diabetes mellitus (T2DM) are vulnerable to hypoglycemia due to several factors including comorbidities, functional abilities and polypharmacy. Despite current guidelines for DM, overtreatment of elderly patients leading to hypoglycemia is common in clinical practice. Up to our knowledge, no prior studies have examined over treatment and hypoglycemia in Saudi Arabia. This study aimed to determine the magnitude of overtreatment and hypoglycemia episodes in elderly Saudi patients with T2DM leading to hospitalization and to identify the associated factors.

Methods: A retrospective cohort study of elderly patients (≥ 65 years old) with confirmed diagnosis of T2DM and receiving pharmacological treatment from King Abdulaziz Medical City in Riyadh, who were admitted through emergency department to general medicine wards or intensive care units (ICUs) between January 2016 to December 2020 due to hypoglycemia.

Results: Among 99,404 elderly patients admitted through emergency department during the study period, 351 (0.353%) admitted due to hypoglycemic episodes. About 95% of patients had multiple comorbidities and nearly 64% of the cases were attributed to overtreatment with antidiabetic medications. The mean average HbA1C was 8.3%. The majority of the study sample (approximately 80%) were on insulin therapy. The use of insulin as monotherapy was significantly associated with more severe symptoms (P=0.014) while the combining insulin with other antidiabetics (excluding Sulfonylureas) was significantly associated with more common symptoms (P=0.004). Furthermore, severe hypoglycemic symptoms were observed more, compared to common symptoms, in patients with lower blood sugar upon admission (2.2±0.9 Vs 2.6±0.8, P<0.001) and demented patients (26.4% Vs 10.1%, P<0.001).

Conclusion: Our study findings over a 5-year period demonstrate that elderly Saudi patients with T2DM may be over-treated, especially those with higher risks for hypoglycemia. To confirm these findings, a larger and higher quality studies are needed.

Abstract 6:
Effectiveness of Ceftazidime-Avibactam versus Colistin in Treating Carbapenem Resistant Enterobacteriaceae (CRE) Bacteremia

Students names: Hala Alsahli, Lama Albabtain, Shahad Alassaf
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Introduction: Antimicrobial treatments for carbapenem-resistant Enterobacteriaceae (CRE) bacteremia are limited, with colistin-based regimens being the mainstay therapy. Ceftazidime-avibactam is an emerging treatment for various CRE infections.
Purpose: This study aimed to assess ceftazidime-avibactam effectiveness compared to colistin in patients with CRE bacteremia.

Methods: This retrospective, multi-center study included adult patients with CRE bacteremia treated with ceftazidime-avibactam or a contemporary colistin dose at King Faisal Specialist Hospital and Research Centre, Riyadh and Jeddah, Saudi Arabia, from 01 September 2017 until 01 December 2020. The risk of 14-day mortality was compared between recipients of ceftazidime-avibactam versus colistin, using Cox multivariable regression, adjusted for Pitt score, Charlson Comorbidity Index score, and treatment with chemotherapy and immunosuppressive agents.

Results: We enrolled 61 patients; 32 received ceftazidime-avibactam, and 29 received colistin. The risk of 14-day mortality was lower in the ceftazidime-avibactam group than the colistin group (hazard ratio [HR] 0.32; 95% confidence interval [CI] 0.10 – 0.99; P=0.049), while the crude 14-day mortality was not different between the two antibiotics (HR, 0.59; 95% CI 0.21- 1.66; P=0.32). There was no difference between ceftazidime-avibactam and colistin in the risks of the crude and the adjusted 30-day mortalities (HR 0.93, 95% CI 0.41 – 2.08; P=0.86, and HR 0.50, 95% CI 0.20 – 1.21; P= 0.12, respectively). The clinical success rate was higher with the use of ceftazidime-avibactam versus colistin (46.8% versus 20.4%, respectively; P=0.047).

Conclusion: Ceftazidime-avibactam was associated with a lower risk of 14-day mortality than colistin in patients with CRE bacteremia.

Abstract 7:
Efficacy of ceftazidime-avibactam as mono-therapy or combination against carbapenem-resistant Enterobacteriaceae

Students names: Rawan Almousa, Nouf Alobaidallah, Amal Alfayez, Rawan Albagli
Supervisors names: Ahlam Alghamdi [a], Hajar Alqahtani [b,c]

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[c] **King Abdullah International Medical Research Center, Riyadh, Saudi Arabia**

Purpose: Is to evaluate the efficacy of utilizing monotherapy ceftazidime-avibactam VS combination therapy with another active agents to treat carbapenem resistance Enterobactereia.

Background: ceftazidime-avibactam CA a 3rd generation cephalosporins combined with non-b-lactam a b-lactamase inhibitor has a broad spectrum of activity against several bacterial infections caused by Carbapenem-resistant Enterobacteriaceae (CRE). We assessed whether CA as a monotherapy or combined with other antibiotics would be effective to treat infections secondary to carbapenem resistance Enterobactereia.

Methods: This retrospective cohort study assigned 233 patients who were at least 18 years of age, had infections secondary to carbapenem resistance Enterobactereia and received either ceftazidime/avibactam alone or combined with colistin, amikacin, aztreonam, tigecycline or gentamicin. Measurements included clinical and microbiological cure rates, mortality rate, relapse and adverse events.

Results: Of the 233 patients 94 (40.3%) were treated with CA combined either with colistin, amikacin, aztreonam, tigecycline or gentamicin and 139(59.7%) Patients were treated with CA alone. Among patients treated with monotherapy therapy 74.6% of patients achieved clinical cure rate and it was significantly higher than the combination therapy 25.3%. The overall mortality rate from CRE infection were similar in the two groups by 51.89% vs. 48.10%. Microbiological cure rates in the two groups were almost the same by 87% of monotherapy vs. 76% of combination. Pneumonia was diagnosed as the most prevalent infectious disease in 75 patients.\

Conclusion: Our findings show that ceftazidime-avibactam CA as a monotherapy has the potential for several infection treating carbapenemase resistance. Further evaluation with larger sample size is warranted.

Abstract 8:
The Use of Antibiotics in Caesarean Section to Prevent Surgical Site Infection: A Retrospective Evaluation

Students names: Leenal AlAwn, Salam AlDossari, Hessah AlHaidar, Noura AlDossary
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[b] Dr. Sulaiman Al-Habib Hospital, Riyadh, Saudi Arabia

Introduction: The rate of cesarean section (CS) worldwide has increased substantially over the past three decades. Among women undergoing CS, surgical site infections (SSIs) are the most common complication. Antibiotics are among the utilized measures for the prevention of SSIs after cesarean deliveries. At dr. Sulaiman Al Habib Hospital, Riyadh, Saudi Arabia, a prophylactic antibiotic protocol, based on cefazolin IV 2g preoperatively, was gradually implemented in 2017. Prior to that, different regimens were used including cefazolin 2g.

Objectives: To investigate SSI incidence rate among a cohort of women who underwent CS at dr. Sulaiman Al Habib Hospital. Additionally, the study aimed to compare the incidence rate of SSIs among women who received antibiotics according to the protocol (cefazolin IV 2 g) and women who received other regimens.

Methods: The study implemented a retrospective chart review for women who underwent CS at dr. Sulaiman Al Habib Hospital. A random sample of the hospital records for CS deliveries was obtained. The sample was based on the year when the study started (2020) and two years before the protocol was implemented.

Results: During the study period, December 2020 – January 2021, a total of 735 women met the inclusion criteria. Overall, the SSI incidence rate was 5.3%. There was no significant difference in SSI incidence rate between women who received antibiotic according to the protocol (4.5%) and those who received other regimens (6.7%) (P-value = 0.127).

Conclusion: The overall rate of SSIs was comparable to what has been published in the literature. No significant difference in SSI incidence rate was found between the different antibiotics used. Therefore, further studies are needed to investigate the role of preoperative antibiotics and to determine the association of certain risk factors in terms of SSI incidence.

Abstract 9:
Early Versus Late Use of Dexamethasone in Critically Ill Patients With COVID-19: A Multicenter, Prospective Cohort Study

Students' names: Shorouq Albelwi, Rahaf Almutairi, Maha Almousa, Razan Alghamdi.
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Background: Corticosteroids, especially dexamethasone, showed a survival benefit in critically ill COVID 19 patients . However, it is unclear whether the timing of dexamethasone initiation is associated with positive outcomes .

Purpose: The aim of this study is to evaluate the timing of dexamethasone initiation and 30-day ICU mortality in critically ill patients with COVID19.

Methods: A multicenter, non-interventional, prospective study for all adult COVID19 admitted to intensive care units (ICUs) who received systemic dexamethasone between March 01 to December 31, 2020. Patients were divided into two groups based on the timing for dexamethasone initiation (early vs. late). Early use defined as the initiation of dexamethasone within three days of ICU admission. Multivariate logistic and generalized linear regression were used. We considered a P value of < 0.05 statistically significant.

Results: A total of 475 patients were included in the study; dexamethasone was initiated early within three days of ICU admission in 433 patients. Early initiation of dexamethasone was associated with lower 30-day ICU mortality (OR [95%CI]: 0.43 [0.23, 0.81], p-value = 0.01), and acute kidney injury during ICU stay, (OR [95%CI]: 0.45 [0.21, 0.94], p-value = 0.03). Additionally, among survivors, early initiation was associated with shorter MV duration (beta coefficient [95% CI]: -0.94 [-1.477, -0.395], p-value = 0.0001), ICU length of stay (LOS) (beta coefficient [95%CI]: -0.73 [-0.9971, -0.469], p-value = 0.0001), and hospital LOS (beta coefficient [95%CI]: -0.68 [-0.913, -0.452], p-value = 0.0001).

Conclusion: Early initiation of dexamethasone within three days of ICU admission in COVID-19 critically ill patients was associated with a mortality benefit. Additionally, it was associated with shorter MV duration, hospital, and ICU LOS

Abstract 10:
Economic Impact of Weight-Based vs Flat Dosing of Nivolumab: A Single Center Experience

Students names: Rahaf Alharbi, Atheer Alotaibi, Khlood Alkhaldi, Shahad Alyami
Supervisors names: Khlood Aldossary [a], Mohammad Alnahedh [b]

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[b] **King Faisal Specialist Hospital and Research Center, Riyadh, Saudi Arabia**

Background: In the United States, the FDA has approved Nivolumab for the treatment of numerous of cancers. Initial trials used weight-based dosing (WBD) for nivolumab at 3mg/kg every 2 weeks. In 2016, the FDA modified the dosage regimen for nivolumab to a flat dose (FD) of 240 mg every two weeks based on studies that proved that the two strategies have similar efficacy and safety profile as well as pharmacokinetic properties.

Objective: The objective is to evaluate the direct economic impact of weight-based versus flat dosing of nivolumab at the KFSHRC cancer center.

Method: A Cost analysis was performed for patients who received nivolumab to treat various types of cancer from October 2015 to December 2020. All Patients who received both dosing regimens of nivolumab were included.

Result: 226 patients met the inclusion criteria and were enrolled in this study. The patients were predominantly male (60.4 %). Upon screening the patients 116 patients (51.3%) received an FD, and 110 patients (48.7%) received a WBD Discussion: Among the 116 patients who received an FD of nivolumab, the selected dosing strategies were considered economically inappropriate n=94 (81%). For this cohort, weight-based dosing was proposed. According to the new proposed weight-based dose, the potential cost savings were calculated by deducting the total cost of the previous flat dose from the cost of the new proposed weight-based dose. The potential cost-saving came out to be 4,803,723 SR. Our data indicate that the majority of the patients who received a flat dose were eligible for a weight-based dose.

Conclusion: Our data showed that weight-based dosing is beneficial from a financial standpoint.

Abstract 11:
Pharmacy Driven Antimicrobial Stewardship Program in Surgical Patients

Students names: Linah Almahmoud, Dalal Alshammari, Lubna Alqudairy , Reuof Alsudais
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[b] King Fahad Medical City, Riyadh, Saudi Arabia

Background: SSIs are potential complications associated with any type of surgical procedure. Although SSIs are among the most preventable HAIs, they still represent a significant burden in terms of patient morbidity and mortality and additional costs to health systems and service payers worldwide. Recently, some concerns have been raised by the Antimicrobial Stewardship utilization regarding physician noncompliance with hospitals standardized antibiotic prophylaxis guidelines. It is estimated that the prevention and implementation of antibiotic prophylaxis is a critical element for any successful surgery, and could reduce the rates of SSIs, which would reduce hospital stay, ICU admission and additional treatment costs.

Objective: The aim of this study is to evaluate the utilization of postoperative antibiotic prophylaxis and apply antimicrobial stewardship tool in surgical patients.
Materials and methods: This study is an audit with intervention and feedback of prospectively collected data of patients from King Fahad Medical City surgical wards, Riyadh, Saudi Arabia, between September 13th and November 19 th, 2020.

Result: Overall, a total of 307 patients were included in the study. Prophylactic antibiotics have been implemented in as many as 87.3% of the study sample; therapeutic antibiotics have been used in only 4.6%, while 6.8% of the patients did not receive any antibiotics. Cefazolin was the most frequent antibiotic in 77.5% of the patients. Our research supports that the hospital stay can be shortened by incorporating stewardship-based protocols in surgical practice. This is manifested by the 82.4 percent of subjects getting their antibiotics discontinued within 24 hours.

Conclusion: Currently, the antimicrobial stewardship program is on the rise, given that it is strongly advocated by medical and surgical professionals. After antimicrobial exposure and judgment of a medical practitioner, there was a marked decrease in the infection rate.
Keywords: Antibiotic, post-operative, prophylaxis, stewardship, surgical patients, surgical site infection.

Abstract 12:
Management of Autism Spectrum Disorder (ASD): A cross-sectional pilot study in Saudi Children

Students names: Afaf Alshehri, Hind almanea, Sara Alnahas, Rawan Hussien
Supervisors Names: Sireen Shilbayeh[a], Saleh AlSalehi[b],Reem Al-qahtani[b], Razan Arnoos[b], Rawan binKhalif[b], Iman Sharaf Adeen[c] , Fawaz al Enazi[c]

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Purpose: The general aim of the study is to describe the pattern of management used in Autism Spectrum Disorder (ASD) among a Saudi autism cross-sectional sample. Other specific objective was to examine the efficacy of risperidone to reduce the target symptoms in ASD, as compared to those who received behavioral therapy only.

Methods : A cross-sectional study was conducted at two centers: in King Abdullah Bin Abdulaziz University Hospital (KAAUH) and King Fahad Medical City (KFMC) for 10 months. On a convenience basis, a prospective visit was scheduled for children who had received regular behavioral therapy and/or antipsychotics (mainly risperidone) together with their parents to conduct assessment of efficacy and some side-effects. The improvement of symptoms of ASD was assessed by using the Aberrant Behavior Checklist-Community Version (ABC-CV) including five subdomains: Irritability, Lethargy, Stereotypy, Hyperactivity, and Inappropriate Speech.

Results: A total of 29 children were included in this study report. The distribution of management strategy was Risperidone (11, 37.9%), Behavioral Therapy Only (9, 31.0%), Risperidone and Behavioral Therapy (9, 31.0%). However, the use of combination of antipsychotic and psychostimulants (5, 17.24%) was less common than the American study (38%).
Surprisingly, score in the Irritability domain was significantly lower in the group receiving behavioral therapy only (P=0.022). There were no significant differences between treatment groups with respect to other ABC subdomains and total score (P>0.05). In consistent with other reports, the study pointed to some evidence of efficacy of risperidone plus behavioral therapy on reducing Hyperactivity symptoms and total ABC score.

Conclusions: Despite the published data of the efficacy and safety supporting that risperidone may have an important role in the management of behavioral problems in ASD children, further stringent prospective design studies involving ASD children in KSA are warrantied to confirm the current observations or encourage its continuous employment as long-term maintenance therapy.

Abstract 13:
The Impact of COVID-19 Pandemic on the Depressive Symptoms and Quality of Life among Health Workers in Saudi Arabia

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Background: During coronavirus disease 2019 (COVID-19) pandemic, workers in the healthcare sector are experiencing high workload, making them susceptible to psychological illness.

Purpose: This study aimed to explore the influence of COVID-19 outbreak on the depressive symptoms and quality of life among health workers (HWs) in Saudi Arabia.

Methods: In this cross-sectional study, the psychological impact and quality of life were assessed using Patient Health Questionnaire-9 (PHQ-9) and Quality-of-Life Enjoyment and Satisfaction Questionnaire Short Form (Q-LES-Q-SF).

Results: A total of 151 HWs participated in the study, from which 80 participants completed the survey (response rate: 53%). Females (85.5%) were predominantly higher than males (14.5%). Minimal to mild depressive symptoms were observed in about 47%, whereas only 11.3% of health workers had severe depressive symptoms. Females had lower PHQ-9 scores compared to males. The occurrence of moderately severe to severe depression in medical HWs was more than two folds compared to non-medical workers (26.5% and 12.9%, respectively). Around 73% of HWs had a Q-LES-Q-SF score above 50%, which indicates moderate to high quality of life. The younger participants had a lower quality of life. Similar scores of Q-LES-Q-SF were reported in both females and males.

Conclusion: Throughout the pandemics, mental status and quality of life of workers in the healthcare sector can be affected. During COVID-19 outbreak, moderately severe to severe depressive symptoms were seen in around 24% of HWs in Saudi Arabia. Additionally, 27.5% had lower quality of life. Longitudinal studies are needed to determine variable changes over time. Recognizing the psychological impact of COVID-19 pandemic can guide policymakers to tailor interventions that support the most vulnerable workers.

Abstract 14:
Tuberculosis Screening Test Predicting Tuberculosis Infection in Solid Organ Transplant Recipients: A Retrospective Cohort Study

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Supervisors Names: Ghazwa B. Korayem[a], Heba Alruwaisan [b], Dema Alissa [b], Reem Almaghrabi [b].

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Background: Tuberculosis (TB) is a common post solid organ transplantation (SOT) infection. Thus, the American Society of transplantation (AST) recommends screening all transplant candidates using either a tuberculin skin test (TST) or interferon-gamma release assay (IGRAs) for latent TB (LTBI). In immunocompromised patients, both TST and IGRA have low sensitivity and have predictive value for active TB progression. The frequency at which TST or IGRA positive patients later progress to active TB after transplantation has yet to be determined. Therefore, this study measures IGRA and TST predictive values for the progression to active TB within 2 years in SOT recipients living in TB endemic region.

Methods: A retrospective cohort study including adult patients at the age of 14 years old or above who underwent deceased donor solid organ transplantation in Riyadh. Recipients were screened for LTBI using either QFT or TST or both pre-transplantation and followed for two years to determine whether they had TB reactivation or de novo TB infection progression.

Result: A total of 183 recipients were included in this study. Within the first year after transplantation, 9 (5%) of transplant recipients were diagnosed with TB. Patients with a positive IGRA test were almost four times more likely to develop TB (RR; 3.857, 95%CI 1.090 to 12.68). IGRA had a positive predictive value of 15% and a negative predictive value of 93.3%.

Conclusion: In conclusion, positive IGRA pre-transplantation was significantly associated with the increased risk of TB development or progression regardless of INH reception. In SOT recipients living in a TB endemic area, relying on IGRA results to determine the need for prescribing INH needs to be revised.

Abstract 15:
Factors Associated with Inappropriate Acid Suppressive Therapy for Stress Ulcer Prophylaxis in Medical Wards

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Background: The inappropriate use of Acid-suppressive therapy (AST) for stress ulcer prophylaxis (SUP) in medical wards remains a common problem worldwide. Previous reports showed that between 22-79% of the AST prescriptions in the hospitals' non-ICU wards have inappropriate indications. However, few studies looked into the factors associated with AST's inappropriate use and whether these factors were related to the patient, institution, or prescribers.

Objective: To identify factors associated with AST's inappropriate use in hospitalized medical ward patients.

Methods: A combined retrospective cohort study reviewing electronic records between January 2018 to July 2019 of medical wards in a Secondary University Hospital, followed by prospective surveys about prescribers' knowledge. Statistical analyses included descriptive statistics and logistic regression.

Results: A total of 335 patients were included. Most of the patients were female (66.6%), with a mean age of 42.4 ±17.7. Eighty-one percent (n=271) of the study subjects were prescribed AST for inappropriate indication. Age, cardiovascular disease and dyslipidemia, were significantly associated with inappropriate prescribing of AST using univariate regression. However, in multivariable regression, NSAIDs, anticoagulants, and antiplatelets use were strongly associated with the inappropriate prescribing indication (OR 0.00, 0.02, 0.01 with p-value < 0.001, respectively). Twenty-seven physicians filled the prescribers survey, and the average prescriber's knowledge score out of 13 was 2.63 ± 1.28. This score did not differ by education level, years of experience, or specialty.

Conclusion: This study showed that the most prominent predictors of inappropriate AST prescribing for SUP are NSAIDs, anticoagulants and antiplatelets use.Prescribers' education supported by hospital protocol or electronic system order criteria may be necessary to limit this issue. However, issuing a guideline about the AST use in non-ICU patients for AST is the first step in guiding the practice.

Abstract 16:
Impact of the absence of pharmacist counseling on the pattern and benefit of oral calcium intake among pregnant women before and during Covid-19 pandemic

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Supervisors names: Badriyah Alotaibi [a], Amal Alnajjar [b]

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Background: Calcium is an essential nutrient to be taken during pregnancy which has the potential to reduce the risk of preeclampsia. The lack of knowledge among pregnant women regarding consumption patterns of calcium with foods/medication that can inhibit calcium absorption uptake can limit its benefit. Factors that impact adherence to calcium intake are lack of information, adverse effects, and poor counseling between provider and patient. This study aims to assess the impact of the absence of pharmacist counseling on the pattern and the benefit of oral calcium intake among pregnant women.

Method: Analytical cross-sectional study was conducted using structured online questionnaires in addition to the electronic medical records at Security Force Hospital in Riyadh between 2016 and 2020. Pregnant women who took calcium and their age were above 18 years old with a history of pre-eclampsia were included. A telephone call survey was conducted to obtain patient information at the Hospital's research center. A questionnaire includes many Axes to determine the patient knowledge of their medications and diseases, also, exploring their adherence, behavior to the medication and type of counseling received.

Results: A total of 264 pregnant women out of 300 responded completely to the questionnaires. Most of the patient started to take calcium during the second trimester 209 (69.2%), Forty-four percent of the patients' age range from 31-40 years and the majority had received a university degree (46.7%). Fifty percent of pregnant women reported not receiving information about calcium oral intake from the pharmacist during dispensing medication.

Conclusion: Absence of pharmacist counseling has significant impact on the pattern and the benefit of oral calcium intake among pregnant women before and during Covid-19, increased risk of preeclampsia due to poor adherence, lack of knowledge, side effect and poor communication between pharmacist and Ob/Gyne (pregnant) patients.

Abstract 17:
Psychological Symptoms Among Saudi Population Caused by Covid-19 News: A Cross-Sectional Study

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Supervisors Names: Badriyah S. Alotaibi[a], Reem BinSuwidan[a], Amal Al-Najjar[b]

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Aim: To assess the prevalence of depression, anxiety, and sleep disturbance caused by Covid-19 news among Saudi population in Saudi Arabia.

Methods: a cross-sectional survey was constructed and shared online through social media platforms to test depression, anxiety, and sleep disturbance. The participants read the written consent form and agreed to participate in an anonymous online survey. The survey consisted of demographic information, depression symptoms, anxiety symptoms and sleeping disorders symptoms.

Results: A total of 1025 participants responded to the survey. Most of them were Saudi (79.7%) females aged between 18 and 24 years old. the level of education was high in more than one-half 604 (58.8%). The prevalence of depression, anxiety and sleep disturbance among Saudi population was not as significant as in other countries, the overall prevalence for depression, anxiety and sleep disturbance was (6.2%), (14.2%) and (2.3%) respectively.

Conclusion: There are many studies that reflect the mental health problems related to the pandemic Covid-19. As the pandemic crisis worsens, mental health problems are expected to worsen exponentially, in this study, fortunately and due to concerted and cooperative planning of Saudi ministries, the prevalence is significantly low compared to other countries.

Abstract 18:
Efficacy of levetiracetam use in neonatal seizure, retrospective cohort study

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Introduction: Elderly patients with type 2 diabetes mellitus (T2DM) are vulnerable to hypoglycemia due to several factors including comorbidities, functional abilities and polypharmacy. Despite current guidelines for DM, overtreatment of elderly patients leading to hypoglycemia is common in clinical practice. Up to our knowledge, no prior studies have examined over treatment and hypoglycemia in Saudi Arabia. This study aimed to determine the magnitude of overtreatment and hypoglycemia episodes in elderly Saudi patients with T2DM leading to hospitalization and to identify the associated factors.

Methods: A retrospective cohort study of elderly patients (≥ 65 years old) with confirmed diagnosis of T2DM and receiving pharmacological treatment from King Abdulaziz Medical City in Riyadh, who were admitted through emergency department to general medicine wards or intensive care units (ICUs) between January 2016 to December 2020 due to hypoglycemia.

Results: Among 99,404 elderly patients admitted through emergency department during the study period, 351 (0.353%) admitted due to hypoglycemic episodes. About 95% of patients had multiple comorbidities and nearly 64% of the cases were attributed to overtreatment with antidiabetic medications. The mean average HbA1C was 8.3%. The majority of the study sample (approximately 80%) were on insulin therapy. The use of insulin as monotherapy was significantly associated with more severe symptoms (P=0.014) while the combining insulin with other antidiabetics (excluding Sulfonylureas) was significantly associated with more common symptoms (P=0.004). Furthermore, severe hypoglycemic symptoms were observed more, compared to common symptoms, in patients with lower blood sugar upon admission (2.2±0.9 Vs 2.6±0.8, P<0.001) and demented patients (26.4% Vs 10.1%, P<0.001).

Conclusion: Our study findings over a 5-year period demonstrate that elderly Saudi patients with T2DM may be over-treated, especially those with higher risks for hypoglycemia. To confirm these findings, a larger and higher quality studies are needed.

Abstract 19:
Safety and clinical outcome of rituximab in neurological disorders: A retrospective cohort study

Students names: Alanoud Alzahrani, Asma Alanzi, Lama Alhaqbani, Yara Aljuwayi, Lama Alhaqbani
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Background: Evidence from a few open-label and uncontrolled studies has suggested that rituximab is a promising treatment for patients with different neurological diseases. The aim of this study was to evaluate the safety and clinical outcomes of rituximab in some neurological disorders including Multiple sclerosis (MS), Myasthenia gravis (MG) and Neuromyelitis Optica (NMO).

Methods: Data was collected by reviewing the patient's medical records. Patients were followed-up at King Faisal Specialist hospital and research center (KFSHRC), Riyadh, Saudi Arabia. The study included patients using rituximab for at least one year.

Results: A total of 118 patients were included. Most common neurological disorders were MS (69.50%), NMO (16.10%) and MG (11%). The patients received a fixed dose of 1g of rituximab on a median of 5 cycles over a median of 450 days. Sore throat (6.8%) was the most frequent reported adverse effect with rituximab therapy, followed by edema (3.40%), bronchospasms (2.50%), then urticaria and infection (1.70%). Overall, out of 118 patients, 64 were stable on rituximab ,47 of patients was clinically improved and 7 was not stable on rituximab therapy. Positive responses were also reflected by reduced use of immunosuppressive medications and lower number of relapses during rituximab therapy compared to prior rituximab therapy outcomes.

Conclusion: Rituximab was frequently used as an off-label therapy in several neurological diseases including MS, MG and NMO. Rituximab was effective as 94% of patients respond to treatment. In addition, rituximab showed good safety profile without any serious infusion reactions.

Abstract 20:
Application of Cancer Immunotherapy in Saudi Hospitals: Barriers and Challenges

Students names: Leeann A. Sowayan, Meaad K. Al-Saad, Lama H. Al-Aboush
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Introduction: The use of immunotherapy has been increasingly progressing over the past few years. Despite the evident success of its application, difficulties still exist in this field.
It was reported that Saudi oncologists face challenges in implementing cancer immunotherapy. In this project, we are investigating the challenges and barriers affecting the application of cancer immunotherapy in Saudi hospitals. A survey was designed and distributed to address this topic.

Methodology: Starting from December 2020 till February 2021, we have conducted a survey that was distributed to different hospitals and cancer centers in Saudi Arabia. It was targeting oncology physicians, nurses, and pharmacists. Data collection took approximately 12 weeks.

Results: The majority of the participants believe that the cost of cancer immunotherapy is the main barrier to its application and more than 80% of the participants granted that patients are willing to use cancer immunotherapy. Moreover, 78% of the participants agreed on the need for more conferences and symposiums about cancer immunotherapy application in Saudi Arabia. 70% of the participants agreed that their hospital protocol supports the use of cancer immunotherapy.

Conclusion: There was a good level of awareness of cancer immunotherapy among the health care practitioners who completed the survey. More cost analysis and pharmacoeconomic studies are needed to guarantee the safety and efficacy of cancer immunotherapy. Further educational activities are needed to increase the awareness and the implementation of cancer immunotherapy in Saudi Arabia.

Abstract 21:
Antipsychotic Medications Non-Adherence Rate and Its Associated Factors Among Psychiatric Disorder Patients: A Retrospective Evaluation

Students names: Mariam Alamri, Jouri Alsamnan, Nouf Alshammari, Raghad Almadkhali
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Background: Antipsychotic medications plays a significant role in controlling psychotic symptoms, preventing relapses, and improving psychosocial functioning. Non-adherence to antipsychotic medications is common among patients with major psychotic disorders which may lead to a higher risk of relapse or worsening of the disease, multiple rehospitalizations, elevated health care costs, and greater mortality rates.

Objective: This study aims to determine medication non-adherence rate and its associated factors among psychotic patients, proposing a means for improving medication adherence among this group.

Method: This study was conducted on 220 patients with age group of 18 years or older in the psychological care department at King Fahad Medical City (KFMC) and included a retrospective review of patient's medical record and a cross-sectional questionnaire using a standardized scale. The Medication Adherence Rating Scale (MARS) was used to assess the level of adherence to medication.

Results: A total of 220 patients were eligible for the study. Females predominates males (52.3%). The mean age of the study participants was 42.05 years. Majority of the patients included were diagnosed with Bipolar disorder 76 (34.5%), Schizophrenia 41 (18.6%) and Major depressive disorder 45 (20.5%) with a disease duration of 3 years on average. Based on MARS, 122 of the patients were found to be non-adherent (55.5%). A significant association was found between multiple dosing regimen, patients with psychosis and patients who take Olanzapine and non-adherence ($P < 0.05$).

Conclusion: The rate of antipsychotic medications non-adherence was high. According to this study, the majority of patients were non-compliance to their medications due to multiple dosing frequency, psychosis, and the use of Olanzapine. Due to the minimum data provided in the literature that discusses non-adherence rate and its influencing factors, further studies are needed to evaluate this problem in Saudi Arabia.

Abstract 22:
Investigation of the Effects of Different Beverages on the Disintegration Time of Over the Counter Medications in Saudi Arabia

Students names: Rahaf Alobaid, Mashael Aldosary , Yara Aldalbahi, Maha Bashiri
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Background: Full disintegration of oral solid dosage forms is critically important to achieve reliable clinical performance of the drug. Tablets/capsules are supposed to be taken with a full glass of water; however, many patients do not follow this recommendation as they administer their medications with beverages other than water.

Aim: This study aims to assess the impact of different commonly consumed beverages in Saudi Arabia on the disintegration times of common over-the-counter (OTC) medication tablets and capsules in the Kingdom of Saudi Arabia.
Method: Five immediate release OTC drugs were chosen: Fevadol®, Solpadeine®, Relaxon®, Artiz ®, and Brufen®. The disintegration times of these medications were assessed using a disintegration test in five beverages: Coca-Cola, Arabic coffee, orange juice, buttermilk, and an energy drink. Times were compared to the disintegration time in water under three temperature conditions (37°C , 5°C, 43°C).

Result: All beverages significantly increased the disintegration times of Fevadol, Solpadeine, and Relaxon in comparison with water. The same was found for Brufen, except that Arabic coffee did not significantly increase disintegration time ($p > 0.05$). The disintegration time of Artize tablets was also significantly influenced by all beverages, except for Coca-Cola and the energy drink, which had no significant impact on the disintegration time.

Conclusion: The tested beverages should not be used as substitutes for water when ingesting medications. Patients should be advised to avoid consuming beverages other than water with therapeutic products. Increasing public awareness of drug-beverage interactions is needed.

Abstract 23:
Assessment of Knowledge and challenges toward the use of Subcutaneous Self-Injecting Insulin among Diabetes patients During COVID-19 Pandemic in Saudi Arabia

Students names: Injood Almutairi , Sarah Almass, Sara Alotaibi, Amjad Otain
Supervisors names: Sammar Alshawwa [a], Amal Alnajjar [b]

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Background: The coronavirus disease (COVID-19) pandemic has revolutionized the delivery of chronic health care. Yet, for diabetic patients touch maintaining a regular contact and health care providers and visit to health care center are crucial to overall control of their glycemic status.
Objective: To assess knowledge of using insulin injection device, challenges faced to obtain medical advice and suggested solutions to overcome them among diabetic patients who are self-administering their injections during the COVID-19 pandemic

Methodology: An observational cross-sectional study was conducted among a sample population (N=178) diabetic patients attending Security Forces Hospital-Riyadh, KSA, from which the IRB was granted. Data were collected using self-administrated questionnaire which was distributed from August to September 2020. Statistical analysis was performed by using SPSS program (version 21). Significant P-Value is <0.05.

Results: Majority of patients had good knowledge and practice explained with values 73.6% of total population. Moderate severity of challenges faced of obtain counseling was reported by 64% of type 1 diabetes versus 59% of type 2 diabetes No correlation between severity and knowledge (p-value=0.36),. The most appropriate solution to obtain counseling was chat conversation with an overall average score 4.9 ± 0.4, (p-value <0.0001)

Conclusion: Even if knowledge is high among Diabetes patients, the continuous support and counseling from health care providers is highly needed. Creating innovative approaches for diabetes patient-health care provider communication under the COVID-19 pandemic is suggested.

Abstract 24:
Studies on biofilm of mixed infection of Pseudomonas aeruginosa and Staphylococcus aureus

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Background: The cooperation of P. aeruginosa and S. aureus in various infections results in increased pathogenicity and antibiotic resistance. However, the mechanism controlling such a phenomenon is still unclear. In this study, the effects of S. aureus on biofilm formation and antibiotic resistance P. aeruginosa were investigated in mixed wound infections.

Material and methods: The effect of S. aureus on biofilm formation and minimum biofilm inhibitory concentrations (MBIC) of P. aeruginosa was investigated in single and dual-species. Three clinical isolates of P. aeruginosa and four S. aureus isolated from wounds were used throughout this study. One-way ANOVA test and student's t-test was used to analyze the effect of S. aureus on biofilm, and resistance of P. aeruginosa in single and mixed culture.

Results: Cultures of the four S. aureus isolates could reduce the biofilm formation of P. aeruginosa in mixed culture compared to the single species biofilm. Susceptibilities to Gentamicin and Ceftriaxone antibiotics were investigated in the tested P. aeruginosa isolates as single species and recovered from the biofilm co-culture. A decrease in susceptibility of Gentamicin was observed, and its MIC increased to 1000 µg/ml for the biofilm conditions instead of 500 and 250 µg/ml for single culture of P1 and P2 &P3 respectively. For Ceftriaxone antibiotic, the resistance of Pseudomonas isolates in biofilm exhibited a 3 – 4 times increase in the MIC compared to those as single culture.

Conclusion: In polymicrobial wound infection, Staphylococcus aureus could affect biofilm formation and the levels of antibiotic susceptibility of P. aeruginosa.

Abstract 25:
The Psychological Impact of COVID-19 Pandemic on College Students' Behavior: A Cross-Sectional Study in Riyadh, Saudi Arabia

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Purpose: This study aims to find the mental health challenges that were encountered by college students during the pandemic of COVID-19.

Methods: A cross-sectional observational study that its data was derived from participants' answers of a structured online questionnaire. This study was operated at different universities in Riyadh, Saudi Arabia. 382 responses were collected, and the data was analyzed using Statistical Product and Service Solutions (SPSS) software analysis tool (version 25.0). Chi square test with $p < 0.05$ was applied to check for significance of differences in responses. Graph representation/data analysis were carried out by using Microsoft Excel spreadsheet.

Results: The results showed that students who do not have any companions and were exposed to the repetitive news via social media tend to accustom higher anxiety levels. Almost half of participants felt anxious regarding the impact of the pandemic upon their lives. Like having sleep problems, feeling phobia or suspicious regarding the whole situation of the pandemic. However, college students did not feel anxious regarding having to wear a mask nor wash or sanitizing their hands. Students' anxiety level rose regarding staying at home. On a gender basis, p-value of 0.342 showed no statistically significant difference between females and males. Withal, it is clearly obvious that anxiety levels of college students uplifted during the epidemic of COVID-19.

Conclusions: This paper indicates that the COVID-19 outbreak has a significant impact on uplifting the anxiety levels of college students.

Abstract 26:
Pharmacy Practitioners' Adherence to Precautionary Guidelines of Handling Chemotherapeutic Drugs: A cross-sectional Study in Saudi Arabia

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Background: Chemotherapeutic drugs (chemotherapy) or antineoplastic agents obviously provide a therapeutic benefit in treatment of cancer patients in addition to other indications. These agents may cause health risks to healthcare providers including pharmacists and pharmacy technicians who handle them on a daily basis.
Amongst the reported adverse effects are skin rashes, sore throat, chronic cough, headache, eye irritation, and allergic reactions [1,2]. Other studies have specifically documented the adverse effects of chemotherapy on female healthcare providers which included infertility, abortion, and birth defects. [3,4].

Purpose: The objectives of this study were to assess pharmacy practitioners' adherence to practice guidelines in Saudi Arabia, identify the barriers against adherence to practice guidelines, and identify any reported side effects.

Methods: A cross-sectional study using online survey was performed during a two-months period. The survey was distributed to pharmacists and pharmacy technicians who handle chemotherapy agents. Ethical exempt approval was obtained from IRB - Princess Nourah University.

Results: A total of 71 oncology pharmacy participants responded to the survey. Biological Safety Cabinet and Chemotherapy Gloves was always used by 91.5% by 94.4% ,For the use of PPEs high adherence was reported. Of the participants, 25.4% reported accidental exposure. The most common reported side effects were skin irritation (19.7%), hair loss (8.5%), and nausea (6%). Nineteen 27% of the participants strongly agree that the availability of some PPEs were a barrier for using them.

Conclusions: The majority of pharmacy practitioners adhere to many aspects of precautionary guidelines of handling chemotherapeutic drugs. Nevertheless, some areas such as medical surveillance program need improvement for better protection of this category of healthcare workers.

Abstract 27:
Bacterial Pathogens and Susceptibility Pattern in Children with UTI

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Background: Urinary tract infection (UTI) is the most common bacterial infectious disease among children which may lead to renal complications. This study aimed to determine the frequency of UTI pathogen among children in King Abdullah Bin Abdulaziz University Hospital (KAAUH) and antimicrobial susceptibility to decide an empirical therapy and decrease random usage of antibiotic.

Method: This study enrolled 153 patients with positive urine culture. Patients were pediatrics age group from birth to 18 years old. A total of 118 (77.1%) were females and 35 (22.9%) were males over a period of 4 years. Patient's distribution included of 98 (64.1%) who visited emergency, 28 (18.3%) were admitted as in-patient, and 27 (17.6%) were outpatient.

Results: Escherichia coli (E.coli) was the leading cause of UTI, responsible for (79.7%), then was Klebsiella Pneumoniae responsible for (18.3%). The least causative was Klebsiella Oxytoca, responsible for (1.96%). The study showed antibiotic sensitivity from highest to lowest percentage respectively, Amikacin showed (100%) sensitivity, as well as meropenem, imipenem, and tigecycline. Piperacillin-tazobactam was sensitive by (93.46%). Gentamicin showed (89.5%) sensitivity while Cephalosporins was sensitive by (88.9%) similar to Ciprofloxacin as it has been sensitive for (88.9%). Amoxicillin-clavulanic acid showed good percentage of sensitivity with (86.27%), trimethoprim-sulfamethoxazole is more sensitive to treating UTI caused by Klebsiella spp. than E. coli, by showing sensitivities of (85.7%), (100%) in klebsiella spp., whereas only (64.7%) sensitive to E. coli. Moreover, Nitrofurantoin showed better sensitivity to E. coli than Klebsiella pneumoniae by (100%) sensitive to E. coli pathogen while (78.5%) sensitive to Klebsiella Pneumoniae. Finally, ampicillin was the lowest by (37.9%).

Conclusion: UTI mainly caused by gram-negative rods with predominance of E. coli. Interim of sensitivity patterns amoxicillin-clavulanic acid and ciprofloxacin considered a good choice of oral empiric therapy while Ceftriaxone and Aminoglycoside considered an excellent empiric therapy in inpatient setting.

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