

Abstracts: JPBS

SYMPOSIUM - ICPRP 2019-ERA OF BIG DATA

ID 1. Investigating Self-medication Practice among Pregnant Women in Kuantan, Pahang

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Introduction: Pregnancy has been associated with discomfort and several health issues that may prompt self-medication. Although various reasons and types of self-medication among pregnant women have been reported worldwide, little is known whether this practice is common among pregnant women in Malaysia. **Objectives:** The study aimed to investigate the practice and factors of self-medication among pregnant women in Kuantan, Pahang. **Materials and Methods:** A cross-sectional survey was conducted by distributing a validated self-administered questionnaire among pregnant women who attended prenatal check-up at the International Islamic University Malaysia Medical Centre Kuantan, Pahang. Data was analysed using Statistical Package for Social Sciences version 22. **Results:** A total of 80 pregnant women participated in the study over a period of five months which accounted for 80% of total sample size. The range for age was 23–45 years and gestational age was 12 – 39 weeks. Most of them had experienced their symptoms such as fever and flu at home but only 32.5% (n=26) practiced self-medication, whereas 67.5% (n=54) did not agree without consulting doctors. Participants took modern medicines (18.75%, n=15), health supplements (76.2%, n=61) and herbal products (5%, n=4). Self-medication was practiced by women who took modern medicines (n=3), health supplements (n=19) and herbal products (n=3). Factors that influenced self-medication were information from the internet (70%), friends (53.75%), articles/books (40%), family members (41.25%) and media (33.75%). **Conclusion:** Self-medication occurred among pregnant women and involved various types of products. Intervention to improve this practice is required to prevent associated risks of adverse outcomes in pregnancy.

KEYWORDS: *Factors, pregnant women, practice, self-medication*

ID 4. Antibiotic Prescribing in an Intensive Care Unit: Findings from a Public Malaysian Setting

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Introduction: Data on antibiotic prescribing together with its knowledge and perception in Malaysian ICU is lacking. **Objectives:** To explore knowledge, perception, and antibiotic prescribing among specialists and advanced trainees in Malaysian ICU. **Materials and Methods:** A cross-sectional survey was employed which consisted of three sections namely knowledge, perception, and practice. Three case vignettes consisted of hospital-acquired pneumonia (HAP), infected necrotising pancreatitis (INP), and catheter-related bloodstream infection (CRBSI) were presented in the practice section to gather information on prescribing practice. **Results:** About 868 respondents were approached but only 104 responded (12.0% response rate). Seven different classes of antibiotics giving a total of 390 were empirically prescribed for the three cases combined. Antibiotic prescribing compliance which indicates correct choice of antibiotics and dosing were 66.3%, 56.7%, and 19.2% for HAI, INP, and CRBSI respectively. In perception, 97.2% and 85.6% of respondents conceded that antibiotic concentration is inadequate, and that dosing be based on MIC respectively. Majority (94.2%) perceived that antibiotic dosing follows PK/PD profile but only half (50.9%) agreed that therapeutic drug monitoring be routinely performed. Comprehension on antibiotics showed that all respondents acknowledged PK/PD profile of antibiotics but only 64.4% able to correlate given antibiotic with their respective PK/PD. Only 13.5% of respondents able to identify the best PD approach for β -lactam antibiotics in sepsis patients. **Conclusion:** Antibiotic prescribing was somewhat appropriate in Malaysian ICU. Prolong therapy and inadequate coverage are the hallmark need to be considered especially in CRBSI. Clinicians are conversant with available antibiotics but apprehension in its PK/PD is scant.

KEYWORDS: *antibiotic, survey, beta-lactam*

ID 5. Investigating the Use and Knowledge of Analgesics among IIUM Undergraduate Pharmacy Students

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Introduction: Analgesics are commonly used to relieve pain and can be obtained through prescription or self-medication. Little is known regarding the use of analgesics among pharmacy students given their unique knowledge and training on medications. **Objectives:** The study aimed to investigate the use and knowledge of analgesics among IIUM Undergraduate Pharmacy Students in Kuantan, Pahang. **Materials and Methods:** A cross-sectional survey was conducted using a validated questionnaire among undergraduate pharmacy students from Year 1 to Year 4. The data from stratified sampling were analysed using IBM SPSS Statistics 22 for descriptive statistics. **Results:** A total of 371 students (82%) participated in the study (age range: 18–25 years). The analgesics used to treat fever (73.0%) and headache (69.3%) were paracetamol (96.5%), mefenamic acid (33.7%), ibuprofen (24.6%) and diclofenac sodium (20.5%). The average score for the knowledge was 5.4/9.0. The fourth year students had the highest knowledge score (6.7) compared to first (3.6), second (5.7) and third (6.1) year. Some took supplements to relieve pain (1.3%). The analgesics used from over the counter/pharmacist recommendation (56.1%) were chosen based on dosage form (52.6%), price (48%) and availability (63.1%). The sources of information were from lecturers (78.4%) and health care providers (73%). The sources of supply were community pharmacies (76.3%), government hospitals/clinics (44.5%) and convenience stores (38.3%). Majority of them took analgesics with food (86.3%) whereas some experienced side effects (16.2%). **Conclusion:** Analgesics were commonly used among pharmacy students through over the counter/pharmacist recommendation. The knowledge regarding analgesics needs to be improved among pharmacy students.

KEYWORDS: Analgesics, factors, knowledge, pharmacy students, sources, use

ID 6. Investigating the Use of Dietary Supplements among Undergraduate Pharmacy Students

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Introduction: Dietary supplements are commonly used among adult's population for various indications. Little

is known about the common types of dietary supplement used and the monthly expenditure for supplements among pharmacy students. **Objectives:** The study aimed to investigate the use of dietary supplements among undergraduate pharmacy students in Kuantan, Pahang. **Materials and Methods:** A cross-sectional survey was conducted using a validated Dietary Supplement Questionnaire among undergraduate pharmacy students at International Islamic University Malaysia. Data were analysed using SPSS for descriptive statistics. **Results:** A total of 372 students participated in the study (age range: 19–25 years), with 45.7% of them took supplements where brands were preferred over generic types. A majority (92.2%) of them did not have any illnesses. The reasons for taking supplements were for general health (38.2%), boosting immunity (18.6%), energy source (9.5%) and enhancing memory (8.8%). The average monthly expenditure for supplement was RM58.73 (USD 14.01). The types of supplements used were multivitamin, evening primrose oil and ginkgo biloba. A majority (68.0%, n=253) of them would recommend supplements with doctors' advice. They agreed that supplements could prevent chronic diseases (38.8%), were harmless (34.9%), are necessary for all ages (21.3%), and could prevent cancer (5.0%). The sources of information were doctors/pharmacists (33.5%), internet (33.1%) and friends/family/relatives (25.0%). They also reported positive (42.5%), neutral (52.4%) and negative (5.0%) experiences from taking supplements. **Conclusion:** Dietary supplements were taken by two-fifths of pharmacy students. Further research is needed to evaluate the rational use of supplements among pharmacy students.

KEYWORDS: Dietary supplements, pharmacy students, types, use

ID 7. The Prevalence of Prescribing Medications Associated with Geriatric Syndromes among Discharged Elderly Patients

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Introduction: A geriatric syndrome is a group of signs and symptoms that happen in older people and do not fit into a discrete disease. Several medications were reported to be associated with the incidence of geriatric syndromes. **Objectives:** To investigate the prevalence of medications associated with geriatric syndromes (MAGSs) among discharged elderly patients (≥ 65 years old). **Materials and Methods:** This was a cross-sectional study that conducted at the International Islamic University Malaysia Medical Centre from October to December 2018. The discharge medications of geriatric patients were reviewed to identify MAGSs using Beers

criteria, Lexicomp drug information handbook and the US FDA drug inserts. Chi-square test was used to compare MAGS prescribing between categories. Spearman's rank-order correlation was used to test the correlation between the presence of MAGS and the number of discharge medications. **Results:** A total of 400 patients (mean age: 72.0 ± 5.0 years) were included, with 45.3% of them were females. The most common diseases were hypertension followed by diabetes mellitus. The mean number of discharge medications per patient was 4.16 ± 2.5 . The MAGSs were prescribed in 51.7% of the patients, with 54 patients were discharged with more than one MAGS. The most commonly prescribed MAGSs were opioid analgesics, vasodilators and beta-adrenergic blockers which are associated with falls, depression and delirium. Polypharmacy was found in 138 patients and it was significantly associated with the presence of MAGS ($P < 0.001$). No significant differences in prescribing MAGSs were found based on the patients' gender, race and age. **Conclusion:** The prescribing of MAGSs occurred in half of discharged elderly patients. Physicians should be aware of medications that are associated with special side effects in older people in order to switch to safer alternatives when possible.

KEYWORDS: *Elderly patients, geriatric syndromes, medication prescribing*

ID 10. A Bibliometric Analysis on the Productivity of Opioid Research in Malaysia

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Introduction: Opioid analgesics have been used widely for the treatment of pain. In the USA, it was reported that the increase in opioid prescribing has also paralleled with the increase of opioid use disorders such as misuse, abuse and opioid overdose death. Little is known about the overall scientific output of opioid research in Malaysia. **Objectives:** This bibliometric study provided an overview of research productivity on opioids in Malaysia. **Materials and Methods:** All original articles on opioid research in Malaysia from 2006 to 2018 were included. The articles were retrieved from databases such as Scopus, Science Direct and PubMed using search terms such as opioids, methadone, fentanyl, oxycodone and morphine. Growth of publications, citation, journal analysis, geographical distribution and issues addressed in the publications were analysed and presented using standard bibliometric indicators. **Results:** A total of 78 research articles on opioids were identified during the

12 year study period. The relative growth of publication during the study period was 10.66%. The most common issue studied was the methadone maintenance therapy. Most articles were published in the indexed journal (94%) and the predominant journal was in the Drug and Alcohol Dependence journal (11.54%). Almost all articles were multi-authored (99%) and the article on buprenorphine and naltrexone reported the highest citations of 85 citations. **Conclusion:** This study showed that the focus of opioid research in Malaysia was in the field of methadone maintenance therapy. Research evaluating opioids in pain management particularly in patients with non-cancer pain is limited and require further exploration.

KEYWORDS: *Bibliometric, Malaysia, Opioids*

ID 11. Prescribing of Non-steroidal Anti-inflammatory Drugs, Tramadol and Opioids in Children: Patterns of its Utilization

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Introduction: Analgesic is commonly used in children but little is known about its patterns of utilization. **Objectives:** This study explored the patterns of analgesic prescribing in children at public tertiary hospital outpatient settings. **Materials and Methods:** This cross-sectional study used prescription databases from 2010 to 2016. Prescriptions for nine NSAIDs (ketoprofen, diclofenac, celecoxib, etoricoxib, ibuprofen, indomethacin, meloxicam, mefenamic acid and naproxen), tramadol and five other opioids (morphine, fentanyl, oxycodone, dihydrocodeine, and buprenorphine) prescribed for children age < 18 years old were included. Number of patients and prescriptions were measured and analysed using Stata v1.5. **Results:** During a 7-year study period, a total of 5040 analgesic prescriptions of the nine NSAIDs, tramadol, and the five other opioids were prescribed for 2460 paediatric patients (81.8% NSAIDs patients, 17.9% tramadol patients, and 0.3% opioid patients). In younger children, ibuprofen was the primary analgesic (≤ 2 years old (y.o) (75%), 3–5 y.o (85%) and 6–12 y.o (56.3%)). There was a wide range of analgesics used in older children with the majority being naproxen (13 to 15 y.o (28.2%) and 16 to 17 y.o (28.2%)). Others included (ibuprofen (20.6%) and diclofenac (18.2%) for 12 to 15 y.o) and (diclofenac (26.7%) and tramadol (17.6%) for 16–17 y.o). **Conclusion:** Ibuprofen was the primary analgesic for children less than 12 years old while there was a wide range of analgesics prescribed for children age above 12 years old including naproxen, diclofenac and tramadol.

KEYWORDS: *Analgesics, children, NSAIDs, opioids, prescribing, tramadol, utilization*

ID 12. Ten Years of Strong Opioid Analgesics Consumption in Malaysia and other Southeast Asian Countries

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Introduction: It was reported that opioid consumption in developing countries was stagnated or decreased but precise data on the consumption are unclear.

Objectives: This study examined the trends and patterns of opioid consumption in Malaysia and other four Southeast Asian countries. **Materials and Methods:** Data of five strong opioids consumption (morphine, oxycodone, fentanyl, pethidine and methadone) between 2005 and 2014 from Malaysia, Singapore, Indonesia, Thailand and Vietnam were extracted from the Pain & Policy Studies Group. Defined daily doses per 1000 inhabitants per day (DDD/1000 inhabitants/day) was used for calculating the annual amount of opioid use. **Results:** The total consumption of five strong opioids was increased in all five Southeast Asian countries during a 10-year study period. Malaysia was recorded with the largest increase of the opioid consumption (993.18%), followed by Indonesia (530.34%), Vietnam (170.17%), Singapore (116.16%) and Thailand (104.66%). Malaysia also had the highest total strong opioid consumption (11.2 DDD/1000 inhabitants/day), primarily for methadone. Among the opioids used for pain management, fentanyl was primarily used in Malaysia and Singapore but the greatest increase in these two countries was for oxycodone. Fentanyl was also primarily used in Indonesia while morphine was predominantly used in Thailand and Vietnam. **Conclusion:** The trends of strong opioids consumption in all five Southeast Asian countries increased steadily from 2005 to 2014. Among the opioids for pain management, fentanyl was primarily used in Malaysia, Singapore and Indonesia while morphine was predominantly used in Thailand and Vietnam.

KEYWORDS: *Analgesics, children, NSAIDs, opioids, prescribing, tramadol, utilization*

ID 13. A Preliminary Evaluation on the Impact of Pharmacist Interventions During Renal Medication Therapy Adherence Clinic (MTAC), in Improving Medication Knowledge among Chronic Kidney Disease Patients

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Introduction: Chronic Kidney Disease (CKD) is a global burden associated with risk of morbidity and mortality. Non-adherence to the complex medications regimen causes rapid progression of the disease. Good knowledge and understanding of their medications have been shown to improve patients' understanding and adherence towards medications. This can be achieved through Medication Therapy Adherence Clinic (MTAC) run by the pharmacist. However, the impact of such clinic has been scarcely evaluated. **Objectives:** This study aims to evaluate the impact of pharmacist-led Renal MTAC in improving the medication knowledge among CKD patients. **Materials and Methods:** This is a retrospective study using convenient sampling method. All CKD patient age 18 years above enrolled in MTAC programme with complete pre and post knowledge assessment were included. Demographics data and pre-post knowledge score were retrieved from patient's electronic medical record system. All data were analysed using SPSS version 24.0. **Results:** A total of 13 patients (with majority being Malay, male with age median of 60) were included in the analysis. Patients' knowledge towards medication has improved significantly with an increase in the median pre knowledge score of 13 to post knowledge score of 18 ($p = 0.002$) after completion of the MTAC session. **Conclusion:** From this preliminary evaluation, pharmacist intervention at MTAC has resulted in significant improvement of medication knowledge which is further expected to improve medication adherence and delay the disease progression.

KEYWORDS: *CKD, knowledge, MTAC*

ID 14. Microwave-assisted Grafting of Locust Bean Gum for Sustained Release Drug Delivery System: Process Optimization and Product Evaluation

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Introduction: Modification of natural materials by graft copolymerization using various monomers offers the opportunities to tailor their physical as well as chemical properties yielding functional macromolecules that may find a wide range of applications. In the literature, many conventional and traditional methods of grafting are reported. However, these conventional methods are having many limitations like slow reaction, low yield, require high amounts of reactants and non-environmental friendly. In order to overcome these limitations, we used optimized microwave assisted technique with reaction time less than 5 minutes and more than 95% yield. **Objectives:** The first objective is to optimize the process of microwave-assisted grafting of locust bean gum using Design of Experiment, with respect to various critical process parameters whilst the second objective is to characterize/evaluate the effectiveness and safety of the

product as sustained release matrix former. **Materials and Methods:** It involved microwave assisted synthesis of polyacrylamide-grafted-locust bean gum using ceric ammonium sulphate as an initiator and optimization of process using 2³ factorial design. The grafted polymer was evaluated by FTIR, NMR, SEM, XRD, DSC, elemental analysis, acute toxicity studies followed by histopathological evaluation, biodegradability and hemolytic potential studies. **Results:** The grafted polymer was found to be non-toxic and biodegradable with sustained release potential over a period of 12 hours with matrix release model. The safety was confirmed by acute toxicity studies followed by histopathological evaluation. The grafted gum was found to be biodegradable and non-toxic. **Conclusion:** The resulted polymer was having tailor-made properties (depending upon degree of grafting), which is very useful in formulation and development of sustained release dosage form of many API molecules.

KEYWORDS: Grafting, locust bean gum

ID 16. Research on Non-steroidal Anti-Inflammatory Drugs in Malaysia: A Bibliometric Analysis

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Introduction: Non-steroidal anti-inflammatory drugs (NSAID) are the most common analgesics used for pain relief. Adverse effects of NSAID range from gastrointestinal tract disturbances to increased risk of bleeding, renal injury, myocardial infarction and stroke. To date, the productivity of NSAID research in Malaysia is not well explored. **Objectives:** This study examined research productivity on NSAID in Malaysia. **Materials and Methods:** This bibliometric study included all published original and reviewed articles on NSAID from 1979 to 2018 in Malaysia. Among the search databases including Google Scholar, PubMed, Science Direct and Scopus. Search terms included NSAID, ibuprofen, celecoxib and naproxen. Outcome measures included the growth of publication, years, authors and geographical distribution. **Results:** Overall, 123 articles were retrieved from 1979 to 2018 in which 7.32% (9/123) were reviewed articles and 92.68% (114/123) were original research articles. The growth rate throughout the study fluctuated in which the highest productivity was 12.3% in 2018. Majority of articles (98.24%) were multiple authored and University Science Malaysia produced the most articles (30 articles). Most of the articles were ISI-indexed (61.40%) and the most frequent published journal was

the Journal of Oleo Science and International Journal of Medicine (both 10.52%). The main issue studied in most of the journals was the laboratory studies on NSAID drug formulation. **Conclusion:** The growth of NSAID research in Malaysia was modest and the majority of research was involving laboratory studies. Clinical studies in patients particularly using a real dataset of large healthcare databases are still lacking.

KEYWORDS: Analgesics, bibliometric, diclofenac sodium, ibuprofen, NSAID, malaysia

ID 17. Clinacanthus nutans Standardized Fraction (SF1) Arrested SiHa Cells at G1/S and Induced Apoptosis via Up Regulation of p53

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Introduction: Cervical cancer is a leading cause of death in women worldwide, and second in Malaysia. Current cancer treatment comes with side effects. *Clinacanthus nutans* has been known traditionally to treat cancer. Our pilot study shown a potent inhibition of *C.nutans* fraction on human cervical cancer cells, SiHa. **Objectives:** To investigate the anticancer mechanism of *C.nutans* standardized fraction, SF1-treated SiHa cells. **Materials and Methods:** SF1 was produced by optimization methods of bioassay guided fractionation. SF1 was identified by Fourier Transform Infrared (FTIR) and Liquid Chromatography Mass Spectrometer (LCMS). SF1 was screened for cytotoxicity activity towards HeLa, SiHa and NIH cells by MTT Assay. The anticancer mechanism of SF1 was evaluated towards SiHa which demonstrated highest cytotoxicity towards SF1 treatment. The mechanism includes cell cycle progression, mode of cell death and protein expression detected using Annexin-V/propidium iodide staining and specific antibody conjugated fluorescent dye; Bax, Bcl-2, p53 and cytochrome C by flowcytometry. **Results:** Major constituents of SF1 was alkaloid with amines as functional group. SF1 exhibited higher cytotoxic activity against SiHa (IC₅₀ value = 9.60 µg/ml) compared to HeLa. Cytoselectivity of SF1 was observed on normal NIH cells with no IC₅₀ value was detected. SF1 induced early apoptosis on SiHa by arresting cell cycle at G1/S. Up-regulation of p53 followed by increasing of pro-apoptotic Bax and decreasing of anti-apoptotic Bcl-2 as well as increment of cytochrome C levels upon treatment with SF1 were shown. **Conclusion:** SF1 demonstrated anticancer activity by inducing apoptosis through arrested G1/S cell cycle checkpoint mediated mitochondrial pathway.

KEYWORDS: *Apoptosis, cervical cancer, clinacanthus nutans*

ID 18. Transcutaneous Delivery of Sodium Ascorbyl Phosphate Using a Solid-in-oil Dispersion Methods

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Introduction: Hydrophilic molecules experience permeation resistance into the skin layer and it is needed specific technique in its delivery. A solid-in-oil dispersion (SOD) methods were successfully to dispersed hydrophilic molecules into an oil phase and could be delivered through the skin. The purpose of this study is to increase the permeation of hydrophilic molecules with the SOD technique by combining it with amphiphilic compounds. **Objectives:** Sodium ascorbyl phosphate (SAP) is a Vitamin C derivative compound with the low permeability, so inhibiting the permeation in the stratum corneum (SC) layer. Soya lecithin and polyethylene glycol 20000 were used as amphiphilic compounds that will form a layer around the SAP molecules so that it is partitioned stronger in the oil phase. **Materials and Methods:** The formation of SOD began by mixing the SAP with amphiphilic compounds through colyophilization process, and then lyophilizate was incorporated into oil in water (O/W) nanoemulsion. Lyophilizate characters and nanoemulsion evaluation were carried out to establish the best formula. Penetration studies were examined by in vitro diffusion tests using Spangler membranes and *Python Reticulus* sheed snake skin in a Franz type diffusion cell. **Results:** SAP was successfully dispersed into oil phase via formation by SOD and morphological observations through Transmission electron microscopy showed that amphiphilic molecules was on the surface of the SAP between oil-water. Penetration study showed that diffusion of SAP increased and reached out $\pm 80\%$ until the 8th hour. The internalization study of sample for fibroblast cells using Confocal Laser Scanning Microscopy proved the ability of sample with an oil base can accumulated in the cytoplasm and permeated to dermis layer, after crossing the SC layer. **Conclusion:** The SOD technique formulation can enhance the penetration of SAP and offers the potential for transcutaneous delivery through a skin.

KEYWORDS: *Amphiphilic, lyophilization, nanoemulsion, penetration, sodium ascorbyl phosphate, solid-in-oil dispersion*

ID 19. Comparison Between Different Production Methods of Chitosan Nanoparticles

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Introduction: Chitosan is a naturally occurring material originated from chitin, a material from the shells of crustaceans such as crabs and shrimps. It is a type of polysaccharide and is generally classified as low-, medium- or high-molecular weight. Chitosan has the potential to be used in different applications including as a drug delivery system. However, there are some challenges in the production of chitosan nanoparticles such as the difficulty to obtain sufficiently small nanoparticles.

Objectives: In this study, we compared the effect of different production methods on the particle size, zeta potential and morphology of the nanoparticles produced.

Materials and Methods: Chitosan nanoparticles were produced through either ion-complexation or ionic-gelation methods and the particles were dried through either lyophilisation or spray-dry techniques. The size and zeta potential of the particles were characterized by using the Malvern® Zeta-Sizer NanoZS. The morphology of the particles produced were characterized through electron microscopy technique. **Results:** Ionic-gelation method produced smaller chitosan nanoparticles (best particles size: 209.3 nm) as compared to the ion-complexation method (best particle size: 621.2 nm). Comparing between the drying techniques, spray-dry technique produced stable chitosan nanoparticles from high-molecular weight chitosan (226.3 nm, ZP: -19.4, good surface morphology based on EM) and it is less suitable for nanoparticles made from low-molecular weight chitosan (481.2 nm, ZP: +16.0, crumpled nanoparticles was observed from EM).

Conclusion: Ionic-gelation method with spray-drying technique may be a useful method for nanoparticles made from high-molecular weight chitosan, whilst for low-molecular weight chitosan, ionic-gelation with lyophilisation would be a better choice.

KEYWORDS: *Chitosan nanoparticles, ionic-gelation, ion-complexation, lyophilisation, spray-dry*

ID 20. G-tolerance: Does Proper Execution of Muscle Straining Matters in a Novice Cadets Wearing G-suit?

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Introduction: Exposure to high positive Gz gravity forces impose extreme physiological stress on the pilot

resulting in G-induced loss of consciousness, visual disturbances and catastrophic consequences. Multiple measures to improve +Gz tolerance were identified. **Objectives:** The aim of the study is to measure the physiological and straining G-tolerance with and without G- suits among novice cadets by using Human centrifuge (ATFS-400). **Materials and Methods:** 75 novice cadets without anti G-suit were subjected to gradual-onset rate (GOR) acceleration using Human centrifuge (ATS 400) at 0.1G/s. Data were taken as physiological run when the subject experienced visual symptom by pushing grey-out' button before executing muscle straining. Muscle straining were executed until the subject's experience the second grey- out. Similar profile was repeated after two minutes of rest but with the subjects wearing anti G-suit. **Results:** The mean of physiological G-tolerance without and with G- suit are 5.011 ± 0.95 Gz and 5.88 ± 1.15 Gz respectively, whereas the mean straining G- tolerance without G suit is 6.45 ± 0.91 Gz and with G-suit is 7.1 ± 0.96 Gz respectively. However, straining without G -suit is shown to provide a higher additional G- protection of 1.417 ± 0.65 Gz as compared to that with G- suit 1.21 ± 0.56 Gz (p -value < 0.000). **Conclusion:** G-protection from muscle straining seems less in novice cadets with no previous high +Gz exposure because it may not be correctly executed in novice cadets because of perception of protection from G-suit.

KEYWORDS: Anti-G-suit, G-tolerance, high +Gz, human centrifuge, muscle straining

ID 21. Plasma Concentrations of Pro-inflammatory Cytokine IL-6 and Anti-inflammatory Cytokine IL-10 in Short and Long Term Opioid Users with Non-cancer Pain

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Introduction: Little is known whether duration of opioid use influences the concentrations of pro and anti-inflammatory cytokines. **Objectives:** This study examined the plasma concentration of pro-inflammatory cytokine, IL-6, and anti-inflammatory cytokine, IL-10, in short and long-term opioid users with non-cancer pain. **Materials and Methods:** Adult patients with opioid therapy for noncancer pain were recruited from pain clinics at two tertiary hospital settings in Malaysia between February 2016 and March 2017. They were stratified into short-or long-term users based on opioid

prescriptions ≥ 90 days per year. A 10 ml blood sample was taken for the analysis of plasma concentrations of IL-6 and IL-10 and were quantified using a highly sensitive multiplex assay. **Results:** Of 38 patients recruited, %38 (n=9/38) and 76% (n=29/38) were respectively short and long-term opioid users. Short term use of opioid was associated with higher levels of IL-6 (mean \pm SD, 173.9 ± 13.7 pg/ml) and IL-10 (50 ± 5.8 pg/ml), while long term use of opioids was associated with lower levels (no significant different) of both cytokines (IL6 (125 ± 16.1 pg/ml) and IL10 (41.3 ± 6.7 pg/ml)). There was strong correlation between IL-6 and IL-10 within the same group ($r^2 = 0.72$, $p < 0.05$) and ($r^2 = 0.76$, $p < 0.05$) for short and long-term users, respectively. **Conclusion:** The duration of opioid use may modulate the level of pro-inflammatory cytokines in which it was higher in short term use and lower in long term use, but the effect of pain relief was similar as both cytokines were well correlated.

KEYWORDS: Non-cancer pain, opioids, pro-inflammatory cytokine IL-6, pro-inflammatory cytokine IL-10

ID 22. Effects of Flaxseed Extract on Skin Wound Healing in Animal Model

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Introduction: Wound healing is a complex process which requires special factors and condition. It includes phases such as cell migration, extracellular matrix deposition, remodelling, and angiogenesis. Drugs which accelerate wound healing are expanded, particularly herbal drugs which mainly safe and effective. **Objectives:** The present study was conducted to evaluate wound healing activity of flaxseed oil on experimentally induced incision wounds, according to histopathological parameters. **Materials and Methods:** The flaxseed oil was prepared according to standard ethanol extraction protocol and was applied to wound. Twenty-seven male New Zealand rabbits were randomly divided into three groups of 9 rabbits: Flaxseed treated (study group), 2% Fucidin cream treated (positive control), and the negative control group which received no treatment. Four linear-shape, full thickness wounds with 15 mm in length were made in both sides of backbone. Tissue samples were obtained at the end of 4, 7 and 14 days from all groups and were stained with

hematoxylin and eosin, then were reviewed under light microscope. The histopathological parameters including inflammatory cells infiltration, reepithelialization, and surface closure rates. The data was analyzed, and $P < 0.05$ was considered statistically significant. **Results:** Flaxseed treated animals showed higher rate of surface closure, re-epithelialization, and reduced inflammatory cell infiltration compared to control group, particularly in 7th day interval. **Conclusion:** Topical administration of Flaxseed promoted the healing process by shortening inflammation phase, elevating surface closure rate, and promoting re-epithelialization process, suggested flaxseed as an effective herbal drug for wound in skin.

KEYWORDS: *Animal, flaxseed, histopathology, skin, wound healing*

ID 23. Cross Sectional Retrospective Study on Paracetamol Post Infants' Vaccination

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Introduction: Practice of dispensing Paracetamol (PCM) post infants' vaccination remains doubtful in Malaysia, thus requiring appropriate regulation measures. **Objectives:** This research aims to investigate the prevalence of PCM prescribing groups and its associated factors (i.e. gender, age, types and stages of vaccination, concomitant vaccines and drugs and/ vitamins). **Materials and Methods:** A retrospective cross-sectional study was done for 2011–2017 where the Adverse Events Following Immunization (AEFI) was extracted from Quest 2, Quest 3 and Quest 3+ System of National Pharmaceutical Regulatory Agency (NPRA). The population of vaccinated babies was extracted from the Ministry of Health (MOH) Malaysia official website. The AEFI data was further categorized into (i)AEFI with possibility for PCM to be prescribed and (ii)AEFI with no possibility for PCM to be prescribed. The data was analysed using Microsoft Excel 2013, Simple and Multiple Logistic Regression Tests, SPSS version 22. **Results:** 359 infants with various AEFI cases reported in 2011–2017. DTaP/Hib/IPV and MMR showed higher prevalence with value of (2.07 and 2.21 respectively) AEFI cases per 100, 000 population than other types of vaccinations meanwhile, the 2 months DTaP/Hib/IPV vaccination showed the highest (3.00) among other age groups. Simple analysis revealed that no factor associated with PCM prescribing groups. Backward Elimination LR Method presented that 3–4 months DTaP/Hib/IPV (95%CI; 0.231, 0.899%; $p=0.023$) was the associated factor of PCM prescribing groups. 1–5 months Hepatitis B (91.57%),

3–4 months DTaP/Hib/IPV (97.8%), 5–12 months DTaP/Hib/IPV (95.64%), concomitant vaccines (10.43%) as well as concomitant drugs and/ vitamins (29.45%) were the identified potential cofounders. **Conclusion:** 2–4 months DTaP/Hib/IPV and 12 months MMR groups were found as the associated factors of PCM prescribing groups, thus PCM post infants' vaccination may be confined to these groups. The population data for the potential cofounders identified may be collected and analysed for the next research.

KEYWORDS: *Dispensing practice, paracetamol post infants' vaccination, vaccine*

ID 24. Influence of DRD2 Polymorphisms on the Clinical Outcomes of Opioid-dependent Malay Males on Methadone Maintenance Therapy (MMT)

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Introduction: Dopamine receptor D2 (DRD2) is one of the dopamine receptors that has been studied in relation to opioid dependence. It is possible, therefore, that variations in the DRD2 gene (*DRD2*) influence clinical outcomes of patients with opioid-dependence on methadone maintenance therapy (MMT), and the association could be ethnic-dependent. **Objectives:** This study investigated the influence of *DRD2* polymorphisms on the clinical outcomes of Malay patients with opioid-dependence on MMT. **Materials and Methods:** The sample composed of 148 patients on the MMT programme. Pain sensitivity, severity of the opiate withdrawal syndrome, and sleep quality and disturbances were assessed using cold pressor test (CPT), Subjective Opiate Withdrawal Scale (SOWS-M) and Pittsburgh Sleep Quality Index (PSQI)-Malay, respectively. DNA was extracted from blood and subjected to *DRD2* genotyping. The relationships between *DRD2* polymorphisms and the clinical outcomes were evaluated using either repeated measure ANOVA, independent t-test or analysis of variance (ANOVA). **Results:** Among 148 patients, 8.1% ($n = 12$), 60.8% ($n = 90$), 27.7% ($n = 41$), and 29.1% ($n = 43$) had at

least one risk allele for Ser311Cys, TaqI A, -141C Ins/Del and A-241G polymorphisms, respectively. There were no significant differences of pain responses (pain threshold, tolerance and intensity), SOWS and PSQI scores between DRD2 polymorphisms. **Conclusion:** The common DRD2 polymorphisms are not associated with pain sensitivity, severity of the opiate withdrawal syndrome, and sleep quality in patients with opioid-dependence on MMT. However, this may be unique for Malays. Other polymorphisms may be more relevant for Malays. Additional research should focus on investigating these findings in larger samples and different ethnicity.

KEYWORDS: Dopamine receptor D2 (DRD2), Pain sensitivity, Severity of the opiate withdrawal syndrome, Sleep quality

ID 25. Study of Extraction Yield, Antioxidant, Total Phenolic and Flavonoid Content and Anti-proliferative Effect of Four Different Extracts of *Gynura procumbens*

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Introduction: *Gynura procumbens* (Asteraceae) is a well-known medicinal plant growing in tropical Asian countries such as China, Thailand, Indonesia, Malaysia, and Vietnam. *G. procumbens* has gained a lot of attention due to its benefits in traditional medicine. **Objectives:** To evaluate the antioxidant, total phenolic and flavonoid content and anti-proliferative effect of four different extracts of *Gynura procumbens*. **Materials and Methods:** *Gynura procumbens* leaves were extracted with methanol, ethyl acetate, chloroform, and butanol separately by simple maceration. Antioxidant activities of all crude extracts were measured against DPPH and Ferric Reducing Assay. The total phenolic and total flavonoid content of extracts were evaluated by Folin-Ciocalteu and Aluminum chloride method, respectively. Antiproliferative effects of all extracts were tested against HePG2 and A549 cell lines. **Results:** Results show that methanol extract gave the highest extraction yield as well as highest percentage free radical DPPH scavenging activity. Other extracts show in the order ethyl acetate>chloroform>butanol. The reducing power activity of all four extracts increases with an increase in concentrations of the plant extracts. Interestingly ethyl acetate shows highest phenolic (183.76 mg GAE/g dry wt.) and flavonoid content (51.97 mg QE/g dry wt. extract) among all extracts tested. The antiproliferative assay results indicate that decreased cell viability and cell growth inhibition has occurred in a dose-dependent manner. Methanol extract shows comparatively good antiproliferative effect than other extracts. The IC50 value of methanol against HePG2 and A549 cell lines at 48 hour treatments were found to be

411.5 ± 14.6 µg/mL and 486.5 ± 5.12 µg/mL, respectively. **Conclusion:** Methanol extract of *Gynura procumbens* exhibited a significant antioxidant activity and anti-proliferative effects against HePG2 and A549 cell lines.

KEYWORDS: Antioxidant, anti-proliferative, cell line, *gynura procumbens*

ID 26. Knowledge, Attitude and Practice About Hepatitis B Infection Among Medical, Dental and Pharmacy Students of a Private Medical University in Malaysia

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Introduction: Hepatitis B is one of the life-threatening viral infections. Healthcare professional students especially from 3rd and 4th year degree programme are susceptible to get hepatitis infection due to contact with patients and clinical instruments in their clinical attachments. **Objectives:** To assess the Knowledge, Attitude and Practice about hepatitis B infection among medical, dental and pharmacy students of a private medical university. **Materials and Methods:** A cross-sectional, questionnaire based study was conducted among medical, dental and pharmacy students of AIMST University, Malaysia. A total 482 students from 3rd and 4th year degree programme enrolled through convenient sampling. A self-administered questionnaire consisting of 34 questions related to hepatitis infection was administered to participants. Data obtained from the students were entered in SPSS version 22. Descriptive analysis and non-parametric tests were used for quantitative analysis as data was not normally distributed on Shapiro-Wilk test. A p-value of less than 0.05 was considered for all the analyses. **Results:** The medical, dental and pharmacy students had good knowledge (mean score: >10), positive attitude (means score: >6) and good practice (means score: >3) about Hepatitis B infection. Mann-Whitney U test determined a significant difference in knowledge (p<0.001) and practice (p<0.001) scores between medical and pharmacy, attitude (p<0.001) scores between medical and dental and, attitude (p<0.001) and practice (p<0.001) scores between pharmacy and dental students. **Conclusion:** Though, the study revealed a good knowledge, positive attitude and good practice of medical, dental and pharmacy students about hepatitis B infection but a significant difference in knowledge, attitude and practice between the groups recalls an immediate attention to empower their KAP about hepatitis infection.

KEYWORDS: Attitude, dental, knowledge, medical, malaysia, pharmacy, practice

ID 27. Impact of Pharmacist-to-Prescriber Educational Intervention on Statin Therapy Prescribing for Type 2 Diabetes Mellitus Patients in Selected Malaysian Primary Care Setting

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Introduction: Previous research reported suboptimal prescribing of statin therapy for patients with type 2 diabetes mellitus (T2DM). There is a lack of data about the evaluation of impact of pharmacist-led interventions to improve statin therapy prescribing among T2DM population in Malaysia. **Objectives:** To evaluate the impact of pharmacist-to-prescriber educational intervention on enhancing the overall appropriate statin therapy prescribing among T2DM patients in selected Malaysian primary care setting. **Materials and Methods:** This was a quasi-experimental design involving a total of 816 medical records from four primary care clinics. The records were distributed as 412 from two sites subjected to study intervention and 404 from control study sites. The intervention was an academic detailing program offered to the general practitioners in two primary care clinics focusing on improving statin therapy prescribing. Post-intervention data collection was performed three months later. A comparison of the overall percentage of appropriate statin therapy prescribing before and after the intervention was performed in all study sites. **Results:** The assessment of the impact of pharmacist-to-prescriber educational intervention in the intervention study sites has revealed a statistically significant improvement in the appropriate statin prescribing from 63.2% (129/204) pre-intervention to 77.9% (162/208) post-intervention, $p = 0.002$. Moreover, the appropriate statin prescribing in control study sites was increased insignificantly from 71% (142/200) pre-intervention to 73.5% (150/204), $p = 0.551$. **Conclusion:** The pharmacist-to-prescriber educational intervention showed a positive impact on improving statin therapy prescribing among patients with T2DM in selected Malaysian primary care setting.

KEYWORDS: Statin prescribing; Type 2 diabetes mellitus; Primary care; Malaysia

ID 28. The Association of Methadone Dose with Continued Illicit Substance Use Among Methadone Patients in Primary Health Care Clinics in Kuantan, Pahang

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Introduction: Studies investigating the misuse of illicit substances among patients in Methadone Maintenance Treatment (MMT) programs are still limited. **Objectives:** This study aimed to determine the association of methadone dose with illicit substance misuse among methadone patients in government MMT programs in Kuantan, Pahang. **Materials and Methods:** This cross-sectional study was conducted at nine MMT clinics in Kuantan, Pahang between January and December 2018. Convenience and snowball sampling were utilised in recruiting the study participants. Active patients with >6 weeks in treatment and >18 years old were the inclusion criteria in this study. Psychiatric patients and in induction phase were excluded. A validated questionnaire was used to collect all required data. The socio-demographic data was descriptively analysed, while Chi-square test was applied for other data analysis. **Results:** A total number of 237 patients enrolled in this study. Majority were males (97%, $n=230/237$), while most were Malays (96%, $n=228/237$), 53% married ($n=125/237$), and 83% ($n=198/237$) were employed. Mean duration of treatment was 48.86 months and average methadone dose was 52.7mg/daily. 55% ($n=130/237$) of respondents were received ≤ 50 mg of methadone dose daily. Low methadone dose (≤ 50 mg/daily) was found to be significantly associated with opiate use in the last 30 days (OR: 0.3: 0.19–0.59; $p < 0.000$). Meanwhile, high methadone dose (>50mg/daily) was associated with opiate injection in the last 30 days (OR: 5.6: 1.72–18.22; $p < 0.002$). **Conclusion:** Since low methadone prescription (≤ 50 mg/daily) was associated with illicit drug use. An optimum methadone maintenance dose >60mg together with psychosocial intervention are deemed appropriate to reduce use of illicit opiates.

KEYWORDS: Dose, Methadone, MMT, Substance use

ID 29. Knowledge, Attitude and Perception on Green Tea Consumption Among Students in Higher Institution in Malaysia

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Introduction: Tea is one of the most beverages that have been consumed for a long time. There are different kind of tea such as black tea, green tea and oolong tea. In this research paper, the focus will be more on green tea. The use of green tea as additional supplement and beverages becoming more popular in Asian region in these past few years. However, most people consume green tea without having proper knowledge. **Objectives:** The purpose of this study is to evaluate the knowledge, attitude and perception on green tea consumption among

students in higher institution of Malaysia. **Materials and Methods:** Study design used for this study is a descriptive cross sectional study. Data were collected from 397 students through a self-design questionnaire. The study was conducted from February 2019 to April 2019. The questionnaire was distributed online by Google form. Data was analyzed by using SPSS version 23. **Results:** Most of the students were found to consume green tea even they come from different educational background. The mean age of the N=397 participants was 22–25 years old. There is no significant relationship between student's knowledge about green tea and the consumption of it. There is significant difference of students' attitude towards green tea consumption. There is also significant relationship of the students that comes from different educational background on the perception towards green tea. **Conclusion:** The study revealed that knowledge about green tea is still low among students in higher institution. However, they still showed positive attitude and perception towards green tea consumption.

KEYWORDS: Attitude, descriptive study, green tea, knowledge, perception, questionnaire, students

ID 30. The Effect of Flaxseed Extract on Genes Expression During Wound Healing Process in Rabbit

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Introduction: Wound healing is a natural response to tissue injury; it involves cellular and biochemical actions. Flaxseed is a natural product that enhances immune system. Nevertheless, limited studies have been done on the response triggered by immune cells and the wound-healing related genes with the use of flaxseed extract on wounded skin for healing process. **Objectives:** To analyze the expression of wound-healing related genes during different stages of wound healing process in rabbit after treatment with flaxseed extract. **Materials and Methods:** Twenty seven rabbits were divided into three groups: Flaxseed, 2% Fucidin, and the negative control. Flaxseed extract was prepared according to standard ethanol extraction protocol and was applied to wound. Full thickness wounds were made in both sides of backbone. Tissue samples were obtained at the end of 4, 7 and 14 days for RNA extraction. Total RNA then subjected for Reverse Transcription-PCR to detect the expression of wound healing-related genes (IL6, IFN- γ , MMP9, TGF- β , and VEGF). The levels of expression are determined by using GAPDH as internal positive control. **Results:** Expression of IL-6, MMP-9 and IFN- γ in

flaxseed treated wound was higher compared to positive and negative control while the expression of VEGF was observed only in non-treated wounds. The level of TGF- β is expressed almost in the same manner for fucidin and flaxseed treated. **Conclusion:** Flaxseed extract caused changes in the level of wound healing-related genes during different phases of healing process. Thus suggesting the potential use of flaxseed for wound healing treatment.

KEYWORDS: Flaxseed extract, genes expression, rabbit, wound healing

ID 32. A Snapshot of the Global Policies and Practices of Medicine Use Reviews by Community Pharmacist in the Management of Chronic Diseases: A Narrative Review

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Introduction: Significant differences exist in how community pharmacist (CP) is being utilized around the globe. **Objectives:** To explore various policies and practices of medicine use review (MUR) by CP in chronic diseases and, its impact and way forward for low- and middle- income countries (L&MIC). **Materials and Methods:** Narrative review, using key words, such as "medicine use review", "medication therapy management" and "community pharmacy" in databases such as PubMed, and Scopus from 2004–2017 to include reviews, overviews, systematic reviews and meta-analyses on the policy, practice and impact of MUR. Studies on attitude or perception were excluded. **Results:** MUR opened an avenue of ongoing collaboration between CP and general practitioners. In terms of policies and practices, the situation in high-income countries was quite encouraging where on an average "type-II" medicine use review was widely in practice and has improved clinical, humanistic and economic outcomes in chronic disease patients. The high-income countries witnessed gradual yet cautious adoption of these services through effective policy shift. However, in L&MIC, a paucity of effective policies was noted. Nevertheless, an emergent recognition of the potential of CPs to contribute in healthcare delivery was evident. **Conclusion:** Promising impact of CPs involvement in the management of chronic diseases was evident in high income countries, however, the situation in L&MIC, which bear an overwhelming share of the global burden of chronic diseases, remains skimpy. Authors believe that way forward to a paradigm shift in any country must involve consensus building methods to bring relevant stakeholders on the same page.

KEYWORDS: Collaboration, community pharmacist, low- and middle- income countries, medicine use review, pharmacy practice and policy

ID 33. Self Nano-Emulsifying Formulation for Gamavuton-0 with Improved Anti-Rheumatoid Arthritis Effectiveness In Vivo

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Introduction: A self nano-emulsifying drug delivery systems (SNEDDS) for Gamavuton-0 (GVT-0) has been developed in this study thus increasing its oral absorption and bioavailability. **Objectives:** The study was aimed to increase GVT-0 effectiveness as anti-rheumatoid arthritis (RA) treatment using SNEDDS formulation. **Materials and Methods:** The SNEDDS was prepared refers to solid dispersion technique. The SNEDDS emulsification time, the emulsion clarity and stability were obtained to find the optimum formula. The droplets size and distribution, zeta potential, in vitro transport, and in vivo activity on RA model rats were then observed on the optimum formula. Cartilage destruction scoring was quantified by using blind testing method. **Results:** F2 appeared to be the optimum formula, since it was spontaneously emulsified in all of the medium and formed the most stable emulsion with the highest clarity index. The F2 was able to form a clear emulsion in less than a minute with homogenous droplets of 11.5 nm in average (PDI = 0.591), and stable for 90 days at room temperature. Around 50% of GVT-0 was transported after 300 minutes and an improvement on cartilage destruction inhibition was observed on GVT-0 SNEDDS. **Conclusion:** The F2 fulfill all of the requirements for SNEDDS formulation and had a better effect in inhibiting cartilage destruction after oral administration.

KEYWORDS: Gamavuton-0 (GVT-0), rheumatoid arthritis (RA), self nano-emulsifying drug delivery systems (SNEDDS)

ID 34. Translation of the Revised Dyadic Adjustment Scale (RDAS) into the Malay Language and Its Psychometric Qualities Among Healthy Married Malay Women

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Introduction: In Malaysia, the problem of marital distress is rising and rapidly becoming an important public health concern. One of the major shortcomings in marital distress management is inadequate marital evaluation. There are, however, very limited localised tools to evaluate marital distress among local married women. **Objectives:** We aimed to translate the original (English) version of the Revised Dyadic Adjustment Scale (RDAS) into a Malay version by the standard procedure and evaluate its psychometric properties. **Materials and Methods:** This cross-sectional study was conducted among 150 healthy married Malay women in Kota Bharu, Kelantan from January to April 2018. The Revised Dyadic Adjustment Scale (RDAS) consists of three domains related to marital which are dyadic consensus, dyadic satisfaction and dyadic cohesion with a total of 14 questions. The comprehensibility of the questions was assessed using forward-backward translation. The concept, content and construct validity, and reliability for each question were also evaluated. **Results:** Of 150 consented participants, the mean age was 34.1 years (SD 9.5, range: 20 - 57). All 14 questions were considered comprehensible by more than 95% of the subjects. The Malay version of the RDAS was valid based on factor loading for dyadic consensus, dyadic satisfaction, and dyadic cohesion which ranged from 0.64 - 0.80, 0.79 - 0.98, and 0.37 - 0.78, respectively. The internal consistency was good with the coefficient alpha of three factors demonstrated: dyadic consensus of 0.87, dyadic satisfaction of 0.93 and dyadic cohesion of 0.78 internal consistency of the items. **Conclusion:** The Malay version of the RDAS was shown to be easy to understand, reliable and proven as a highly valid tool for married women assessment. This version is comparable with the original version of the RDAS in terms of structure and psychometric properties.

KEYWORDS: Marital relationship, validation questionnaire

ID 35. Screening of Electrospray Operating Parameters in the Production of Alginate-Royal Jelly Microbeads Using Factorial Design

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Introduction: Royal jelly (RJ) has been consumed as food or as a supplement because of its high nutritional and medicinal values. A fresh harvested RJ is yellowish to whitish in color and contains proteins, free amino acids, lipids, vitamins, and sugar. Without proper storage conditions such as at 4 °C, RJ's color changes to much darker yellow and produces a rancid smell. In order to prolong its shelf life, RJ is usually mixed with honey. Alginate, a natural and edible polymer derived from seaweed is commonly used to encapsulate drugs and food due to its ability to form gels by reacting with divalent cations. However, there is a lack of research on the microencapsulation of RJ in alginate using electrospray. The electrospray technique has the advantage of producing consistent size and shape of alginate microbeads under optimum parameters. **Objectives:** This research aims to screen electrospray operating parameters in producing alginate-RJ microbeads. **Materials and Methods:** Screening of alginate-RJ microbeads electrospray parameters was done using 2⁴ factorial design with 3 center points (19 runs). The studied parameters were flow rate, high voltage, nozzle size, and tip-to-collector distance while the responses were particle size, particle size distribution, and sphericity factor. The responses of each run were analyzed using Design Expert® software. **Results:** Nozzle size is a significant parameter that influences the particle size. Flow rate is a significant parameter influencing the sphericity factor. **Conclusion:** Screening of the electrospray operating parameters paves the way in determining the significant parameters and their design space to produce consistent alginate-RJ microbeads.

KEYWORDS: *Alginate, Electrospray, Factorial design, Royal jelly*

ID 36. Outcome Evaluation on Insulin Injection Technique Education by Pharmacists, among Type 2 Diabetes Mellitus Patients in Hospital Putrajaya

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Introduction: Correct insulin technique is important in ensuring optimal insulin systemic delivery and glycemic control. However, the impact of pharmacists' insulin injection education among Type 2 Diabetes Mellitus (T2DM) patients in Putrajaya Hospital is not well understood. **Objectives:** This study aimed to evaluate the outcome of pharmacists' insulin injection education on T2DM patients' insulin technique and its related problems. **Materials and Methods:** There were 118 subjects recruited from June to August 2018. This study

included outpatients aged >18 years old with T2DM, self-administering insulin and has consistent medication refill history in pharmacy records. This study excluded patients who started on insulin < 6 months ago, with unavailable HbA1c levels from past 3 months or refused informed consent. Subjects' insulin technique and its related problems were assessed during baseline visit using the 10-item-insulin counseling checklist after which insulin injection education (intervention) was given. Reassessment was performed 3 months post-baseline visit. **Results:** Median insulin technique score increased from 9.0 (IQR, 8.0 – 10.0) pre-intervention to 10.0 (IQR, 9.0 – 10.0) post-intervention. Insulin-related problems (pre vs. post-intervention) which were lipohypertrophy (22.0% vs. 14.4%), lipoatrophy (5.1% vs. 3.4%), bleeding at injection site (30.5% vs. 17.8%), bruising at injection site (28.0% vs. 17.8%), insulin leakage from injection site (16.1% vs. 10.2%) and insulin leakage from needle tip post-injection (27.1% vs. 16.1%) showed significant reductions post-intervention. Mean HbA1c pre-intervention (9.0 ± 2.1%) and post-intervention (9.1 ± 1.8%) however were not statistically different. **Conclusion:** In conclusion, pharmacists' insulin injection technique education has evidently improved T2DM patients' insulin technique besides reducing their insulin injection-related problems.

KEYWORDS: *Hemoglobin A1c, insulin injection technique, insulin injection-related problems, pharmacists' education, type 2 diabetes mellitus*

ID 37. Level of Knowledge and Practice on Automated External Defibrillator (AED) among Public and Staffs at Terminal Bersepadu Selatan (TBS)

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Introduction: An Automated External Defibrillator (AED) is an emergency device that gives a possibility of remnants during an out-of-hospital-cardiac-arrest (OHCA) to be saved. Its application among public is potent on OHCA occurrence in particular Malaysia as the cases are increasing. **Objectives:** Hence, this study was aimed to identify the level of knowledge and practice of AED among public and staffs. Further on to compare the knowledge and practice level of AED usage between staffs and public; identification on the knowledge level on sign of cardiac arrest among public and staffs; identification on the frequency of cardiac arrest incidence. **Materials and Methods:** The study is designed via survey using convenience sampling and direct questionnaire to among 110 public and 50 staffs as respondents in TBS. Since the number of respondent is imbalance between public and staff, a ratio method is applied. Subsequently, the data

are then analyzed using descriptive and T-test analysis. **Results:** In this research, the knowledge level on AED among respondents was low. While, the practice level on AED among respondents was high. Furthermore, the comparison on the knowledge and practice level between staffs and public was no significance different ($P\text{-value} > .005$). 62.37% of respondents were unknowing on the common sign of cardiac arrest. **Conclusion:** In estimation, the frequency of cardiac arrest that occurred recently at TBS within 2018 was 1 to 3 cases. These would reflect to actual scenario in Malaysia as to generate proper rules of AED placement and usage at every public places including public awareness.

KEYWORDS: Automated external defibrillator, AED, terminal bersepadu selatan (TBS).

ID 38. Pattern of Hands-Foot-and-Mouth Disease (HFMD) among Children in Malaysia

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Introduction: Despite efforts to curb and prevent the cases of Hands-Foot-and-Mouth Disease (HFMD), the number of cases keeps increasing every year and presents a perturbing threat to public health especially children and infants in Malaysia. HFMD is characterized by rapidly ulcerating vesicles in the mouth and lesions, usually vesicular on the hands and feet mainly caused by Enterovirus-71 and Coxsackie virus A16. There is no specific treatment to cure but only to ease symptoms. **Objectives:** This study aimed to determine the pattern of Hands-Foot-and-Mouth Disease (HFMD) cases among children in Malaysia, to determine possible places of getting the infection, to identify the spread prevention measures taken by parents and to identify alternative treatments that can be used to treat the symptoms of HFMD. **Materials and Methods:** A case study analysis was conducted using secondary data from journals, Ministry of Health (MOH) and Malaysian Administrative Modernisation and Management Planning Unit (MAMPU). 35 respondents who have children previously infected with HFMD were given a set of questionnaire and the data was descriptively analysed. **Results:** Annual cases of HFMD increase every two to three years in Malaysia with an alarming increase in 2018. Based on the questionnaire, 37% respondents think that their children acquired the infection at day care centre and 70% of the respondents practise quarantine as the best spread prevention measure. It was also showed that 30% of respondents used soap as alternative treatment to alleviate the symptoms. **Conclusion:** Essentially, outbreak of HFMD can occur anytime, thus, steps

that were proven to effectively prevent children from acquiring and spreading the illness must be promoted actively among Malaysian parents.

KEYWORDS: Coxsackie, enterovirus, hands-foot-and-mouth disease, HFMD

ID 39. Level of Knowledge About Slipped Disc among Athlete Students at Sekolah Sukan Bukit Jalil

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Introduction: Slipped disc is a displacement of disc material (nucleus pulposus or annulus fibrosis) in the intervertebral disc space. Athletes have a greater prevalence and degree of lumbar disc degeneration as they tend to put more pressure on the spines during training or competing. Disc also can bulge, slip or rupture. It has high risk of getting slipped disc especially to the young athletes who have an incessant training and who is a very competitive athlete. **Objectives:** This study aims to identify the level of knowledge about slipped disc among age, gender and between sports types. **Materials and Methods:** 80 questionnaires were distributed among respondent at Sekolah Sukan Bukit Jalil. The collected data were analyzed using descriptive and T- test analysis. **Results:** Score level of knowledge students at Sekolah Sukan Bukit Jalil is $14.86 + 4.74$. Frequency knowledge level for gender and age, each showed female was higher than male and all age was high. Between the sport types, three out of four sports have high knowledge level. **Conclusion:** This study can contribute to community in spread of the information about slipped disc through campaign or activity related to musculoskeletal health.

KEYWORDS: Athlete, slipped-disc

ID 40. Congenital Anomalies among Women Who Have Congenital Anomalies Child

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Introduction: Congenital Anomalies (CA) can cause fetal, neonatal death and childhood morbidity. **Objectives:** The aim of this study is to determine the factor of CA and birth defects among women who have CA child; to identify the frequency of maternal age during pregnancy based on factor of CA; and to identify the types of CA found. **Materials and Methods:** The

respondent is women who have CA child. Questionnaire, face to face interviews, journals and articles were used in this study to collect sociodemographic, types of CA & birth defects suffered by their child and the factor of CA and birth defects. Data analysis used is descriptive analysis. **Results:** Based on our findings, CA is caused by genetic, environmental, socioeconomic, demographic, infectious and maternal nutritional status. Analysis of the data showed that among three maternal age categories, the highest frequency is maternal age 35 years old and above (21 per 30) followed by 20 to 34 years old (9 per 30). The final results conclude that the most type of CA group found is chromosomal anomalies (40%). In addition, other types of CA that are experienced by mothers are orofacial cleft (16.7%), genitourinary (13.35%), musculoskeletal (10%), central nervous system (6.7%), circulatory (6.7%), gastrointestinal (6.7%) based on maternal age and other factors of CA. **Conclusion:** As a conclusion, early prevention of CA should be carried out for those who intend to conceive as this could be a threaten to pregnant woman.

KEYWORDS: Congenital anomalies, CA

ID 41. Review of Antimicrobial Activity of Natural Plants Extracts Against Methicillin Resistance Staphylococcus Aureus (MRSA)

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Introduction: Methicillin resistance *Staphylococcus aureus* (MRSA) is one of important bacterial pathogens in healthcare services and associated with high risk of morbidity and mortality. With the rapid mutations of MRSA, the potency of first and second line of antibiotic become ineffective. **Objectives:** This study aimed to summarize and to compare the effectiveness of antimicrobial activity of *Nigella sativa*, *Olea europaea*, *Allium sativum* and Manuka honey against MRSA based on the susceptibility assay as well as providing overview of the compound responsible for the inhibition from the previous literature. **Materials and Methods:** The study employed secondary data collection from previous published journal on antimicrobial activity against MRSA. The data analysis is descriptive. **Results:** *Nigella sativa* reported values of MIC and MBC against MRSA is 0.04 mg/mL - 0.5 mg/mL and 1.6 mg/mL respectively. The active compound that responsible for the antimicrobial action is thymoquinone, thymohydroquinone and thymol. Meanwhile for *Olea europea*, the reported values of MIC ranged from 0.284–12.5 mg/mL and MBC was 0.8–12.5 mg/mL and it exhibited compounds tyrosol, hydroxytyrosol and oleuropein. *Allium sativum* reported to have MIC and MBC values ranged from 2 to 4 mg/mL and from 3.1- 64 mg/mL respectively that is contributed

by the action of allicin and diallyl sulphides. Manuka honey has the highest concentration of MIC and MBC values that ranged 177.5–420 and 177.5 respectively by the action of hydrogen peroxide, methylsyringate and methylgloxal. **Conclusion:** *Nigella sativa* is the most effective antimicrobial action from natural sources against MRSA. *Nigella sativa* compounds are thymoquinone, thymohydroquinone and thymol.

KEYWORDS: *Allium sativum*, antimicrobial activity, MRSA, manuka honey, *nigella sativa*, *olea europaea*

ID 42. Assessing Adherence to Direct Oral Anticoagulants (DOACs) Among Patients with Atrial Fibrillation in Tertiary-Care Referral Centres in Malaysia

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Introduction: Direct oral anticoagulants (DOACs), such as dabigatran and rivaroxaban, are now available for stroke prevention in patients with atrial fibrillation (AF) and are often clinically preferred over vitamin K antagonists (VKAs), such as warfarin. Data describing adherence to DOACs in real-life clinical practice in Malaysia are scarce. **Objectives:** This study aimed to assess adherence to DOACs in patients with AF at Hospital Kuala Lumpur (HKL) and Hospital Serdang (HSDG), tertiary-care referral centres. **Materials and Methods:** This was a retrospective cohort study that included all AF patients who were treated with DOACs (dabigatran or rivaroxaban) in HKL and HSDG. Data were obtained from medical records and pharmacy database. Adherence was assessed by using proportion of days covered (PDC) over a 1-year duration and was calculated as the number of days that the medication was on hand over the total number of days in the time period. Good adherence was defined as PDC \geq 80%. **Results:** There were 281 patients who met the inclusion criteria, male 54.1%(n=152), with 75.1%(n=211) patients on dabigatran and others on rivaroxaban. The ethnic distribution was Chinese 49.8%(n=140), Malay 41.6%(n=117), and Indian 8.5%(n=24). Only 66.9% of patients achieved good adherence with PDC \geq 80%. Adherence by institution was good in HKL with 85.2%(n=69/81) but poor in HSDG with 59.5%(n=119/200) [p<0.05]. **Conclusion:** Overall adherence to DOACs was poor but it varied between institutions, potentially due to institution-specific

administrative and clinical practice differences. Clinical care can potentially be optimized by identifying factors affecting adherence and implementing adherence-improving interventions.

KEYWORDS: *Anticoagulants, atrial fibrillation, direct oral anticoagulants, medication adherence, malaysia, oral anticoagulants*

ID 43. Prescription-level of Tramadol Utilisation at a Tertiary Hospital Setting in Malaysia: Changing Trends over a 7-Year Follow-up Period

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Introduction: Tramadol has been reported as the most frequently prescribed analgesic in Malaysia's hospital outpatient setting. However, little is known regarding the trends of tramadol prescribing in this country. **Objectives:** This study evaluated the trends of tramadol prescribing in Malaysia. **Materials and Methods:** This retrospective cross-sectional study was conducted using the prescription database of a tertiary hospital in Malaysia. All outpatient tramadol prescriptions that were issued for adult patients aged ≥ 18 years old from year 2010 to 2016 were included. The annual number of prescriptions and patients measured in repeat cross-sectional estimates for each year were evaluated. Descriptive statistics and linear trend analysis were applied using Stata version 15.1. **Results:** A total of 64,108 tramadol prescriptions were prescribed for 40,537 patients (age range: 18–105 years old) from 2010 to 2016. Prescriptions for tramadol increased by 50.2% from 7,640 in 2010, to 11,476 in 2016 with an average annual increment of 6.8%. The number of new patients prescribed with tramadol increased by an average of 6.5% annually throughout the study period. The majority (75.4%, $n=30581$) of patients received one tramadol prescription. **Conclusion:** Tramadol prescribing increased gradually over the 7-year study period. Most patients received only one prescription of tramadol - presumably indicating the use of tramadol for acute pain conditions. Further investigations on its indication and clinical outcomes are required to ensure safe and rational use of tramadol.

KEYWORDS: *Malaysia, opioids, patterns, trends of prescribing, tramadol*

ID 46. Exploring Medications for Hypertension Online: A Qualitative Study in Indonesia

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Introduction: Self-medication practices among patients with hypertension are widely reported. Purchasing medications through online marketplaces are growing to be trend in the future. **Objectives:** To identify products offered by Indonesian online marketplaces in terms of medications for hypertension. The availability of anti-hypertensive medication on these platforms were also studied. **Materials and Methods:** This qualitative study assessed three online marketplaces in Indonesia in May 2019. Five top products in each online marketplace were identified. In depth analysis was performed to get detailed products' information e.g. ingredients, indications, customers' comments. Selected anti-hypertensive medications (captopril, amlodipine and valsartan) were searched and reviewed. Data were descriptively analyzed. **Results:** Search results showed more than 5000 offers were provided in each online marketplace; all top products offered in the platforms were traditional medicines. Some products specifically named to convince their efficacy in lowering blood pressure, e.g. "the solution for hypertension (without complication)". Testimonies and customers' recommendation were presented. *Morinda citrifolia* (noni) and *Allium sativum* (garlic) were commonly found across the platforms; both as single or combination with other herbal medicines. With regard to anti-hypertensive medications, they can also be easily purchased through online marketplaces reviewed. However, the information regarding dosage forms, indications, side effects and contraindications of these medications were rarely provided. **Conclusion:** Indonesian online marketplaces provide wide range of hypertension medication products particularly traditional medicines. Given the increasing trends of online shopping, providing objective and adequate information for customers is essential. Regulations on the purchasing prescription-only medicines such as anti-hypertensive medications need to be strengthened.

KEYWORDS: *Hypertension, internet, marketplace, online, self medication*

ID 48. Evaluation of Prosecution Against Illegal Drugs and Cosmetics by Pharmacy Enforcement Branch (PEB) in Sarawak Malaysia

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Introduction: Prosecutes the offenders in the court in accordance to the laws and regulations enforce with

firm penalty is up most important to assure our laws and regulations were intact. However, the performance and outcome of prosecution done were not being explored extensively. **Objectives:** To evaluate on the prosecution successful rate and the intensity on fines of Prosecution Against Illegal Drugs and Cosmetics by Pharmacy Enforcement Branch (PEB) in Sarawak Malaysia. **Materials and Methods:** This is a cross sectional retrospective study where data were collected from the Sarawak state PEB prosecution reports from 1st January 2014 to 31st December 2016. Descriptive statistics, in numbers and percentages, were used to present the prevalence of cases prosecuted by PEB and its successful rate, while Kruskal Wallis Test was used to compare median of the fines (2014–2016). **Results:** Prosecution successful rate was found to improve from 52.6% (2014) to 62.8 (2015) and further increased to 69.4% (2016) due to high plead guilty rate. This reflected that the intensity of the penalty imposed was not sufficient. Median of the penalties for top 3 offences (Ranging RM1000-RM3000 throughout the study period) prosecuted shown to be statistically insignificant throughout the study periods, even though we observed increased frequency of the cases charged. **Conclusion:** This study serves as a baseline which provides valuable insights to policy makers, researchers and other stakeholders in determine the intensity of penalty and the necessity reformulating our existing laws and regulations.

KEYWORDS: *Fines and penalties, illegal drugs and cosmetics, malaysia law, Prosecution*

ID 51. Formulation and Characterisation of Jernang Resin (*Daemonorops draco* (Willd.) Blume) Sunscreen Creams

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Introduction: Overexposure of skin to direct sunlight can cause negative effects such as pigmentation, irritation and wrinkles. One of the personal care products that can prevent these negative effects is a sunscreen cream. The cream works by either absorbing or deflecting the ultraviolet (UV) rays, which are the components of sunlight that cause skin damage. The resin of Jernang, one of the Indonesian endemic flora, has the potential to be a sunscreen as it contains polyphenol compounds that can absorb UV rays. **Objectives:** Formulate sunscreen creams based on Jernang resin and to characterize the creams,

including to determine their Sun Protection Factor (SPF) values. Three sunscreen creams with different concentration of Jernang resin 1% (FI), 2% (FII), and 3% (FIII) were prepared. **Materials and Methods:** The creams were evaluated in terms of their physical properties, such as organoleptic, pH, homogeneity, viscosity, adhesiveness, spreadability, cream type and stability. The SPF values of the creams were determined using UV-vis spectrophotometers and evaluated with the Mansur equation. The comparative control used was the Skinaqua SPF 15 as a positive control and base cream as a negative control. **Results:** Show that the higher the concentration of Jernang resin ability as sunscreen, the lower SPF value, where all the cream sunscreen formula has a value of SPF 11,87-12,69 with an extra category. **Conclusion:** a formula that has properties A good and stable physical on storage is a FIII with a 3% Jernang resin concentration and an SPF 15,59 value with an ultra category.

KEYWORDS: *Jernang resin, sunscreen, SPF*

ID 52. Gender Differences on Methadone Maintenance Treatment (MMT) Outcome among Patients with Opioid Use Disorder: A Systematic Review

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Introduction: Methadone Maintenance Therapy (MMT) is an effective harm-reduction programme aims to treat patients with opioid use disorders (OUD). Gender difference among them has known to affect and contribute to opioid use pattern and treatment outcomes. Thus, we present a review which helps to provide information for future reference. **Objectives:** to review the significant differences of MMT outcomes related to drug-use behaviour, health status and social behavioural functioning between genders **Material and Methods:** A search of publication was conducted in PubMed/MEDLINE, Embase, CINAHL, PsycINFO and Scopus database. Two reviewers independently screened the titles, abstracts and keyword use for the search. Inclusion of studies based on randomized controlled trials (RCTs) or observational studies that report the difference of opioid addiction treatment outcomes between genders. Any conflict between the two reviewers was resolved through discussion and consensus. The systematic review followed the preferred Reporting Items for Systematic Review and Meta-Analyses (PRISMA) guidelines and registered in PROSPERO with a registration number CRD42019116261. **Results:** A total of 25 studies were evaluated as part of qualitative synthesis. The review resulted in three main themes which are: - 1) Improving wellbeing and

methadone related outcome (five sub-themes), 2) Impact on social and behavioural (four sub-themes) and 3) Illicit drug use pattern related behaviour (four sub-themes). **Conclusion:** This review will highlight how men and women differ in methadone treatment outcomes for further application and improvement in the clinical setting.

KEYWORDS: Gender difference, methadone treatment outcome, systematic review

ID 53. Effects of Different Mixing Methods Towards Black Seed Oil-Alginate Emulsion Characteristics

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Introduction: Black seed oil (BSO) contains active ingredient, thymoquinone which is well-known for its antioxidant property. The bitter taste of BSO makes it hard for the consumers especially children and elderly to consume it daily. Therefore, BSO is encapsulated in alginate beads in micrometre size to improve its palatability. This encapsulation was already established in the lab scale. Production of the beads in a large quantity requires initial preparation of an optimised BSO-alginate emulsion starting with the different mixing methods including the sonication process. **Objectives:** This study aims to prepare an optimised BSO-alginate emulsion using different types of mixing instruments and flow cell of the sonication process. **Materials and Methods:** BSO-alginate emulsion was prepared using magnetic stirrer (MS) as the benchmark, overhead stirrer (OS), homogeniser (H) and overhead stirrer combined with homogeniser (OSH). Then, the coarse emulsion was sonicated to produce a stable emulsion. The studied parameters were mixing time, turbidity, droplet size and zeta potential. The results of each mixing method were then analysed statistically. **Results:** The time taken for alginate to completely dissolve in BSO emulsion for MS, OS, H and OSH were 45, 230, 102 and 46 minutes respectively. Turbidity of BSO-alginate emulsion using OSH was significantly ($p < 0.05$) lower than the benchmark indicates a more stable emulsion. There were no significant differences ($p < 0.05$) between the droplet size and zeta potential of OSH and MS emulsions. **Conclusion:** OSH gives better emulsion characteristics in terms of lower turbidity, similar mixing time, droplet size and zeta potential compared to MS.

KEYWORDS: Alginate, black seed oil, emulsion, homogeniser, overhead stirrer

ID 54. Antibacterial Activity Test of the Jernang Resin Toothpaste (*Daemonorops draco* (Willd.) Blume) Against *Streptococcus mutans*

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Introduction: Jernang is one of the endemic plant of Indonesia, which is found only in the Borneo and Sumatra islands. One of the species of superior jernang that grows in Jambi is *Daemonorops draco* (Willd.) Blume) with the best quality and contains the most large levels of dracohordin. Red resin is widely utilized as dyes, medication and cosmetics. Jernang resin contains flavonoid compounds, polyphenols and triterpenoids that can kill and inhibit the growth of microorganism so it has activity as antibacterial in the mouth against *Streptococcus mutans* bacteria. Based on this, it is useful to use jernang resin to be an excellent product of technology such as toothpaste. **Objectives:** The study aimed to determine the antibacterial activity of the jernang resin in toothpaste with different concentrations. **Materials and Methods:** In this research, toothpaste was made into three formulas with a concentration of 1% (F1), 2% (F2), 3% (F3). Antibacterial activity test against *Streptococcus mutans* by using a submachine diffusion method. The comparison control were the branded Formula antibacterial as a positive control and the toothpaste base as a negative control. The data obtained in test of antibacterial activity are analyzed descriptively. **Results:** The results showed that the highest the concentration of jernang resin, ability as antibacterial decreased, where in the diameter of the resistance is smaller. **Conclusion:** The formula of toothpaste that has good physical properties and stable in storage was F2 with a 2% jernang resin concentration and has antibacterial activity against *Streptococcus mutans* very strong with diameter of inhibition power was 23 mm.

KEYWORDS: Jernang resin, streptococcus mutans, Toothpaste

ID 56. Activity of Flavonoid Compounds from *Eriocaulon cinereum* R.Br on Breast Cancer Cells (T47D)

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Introduction: Worldwide, breast cancer covers 25.5% of all cancers in women. In 2013, the prevalence of breast cancer was 1.4% or an estimated 347,792 people in the population of all ages in Indonesia. Therefore, effective alternative therapies for cancer are needed with minimal side effects. Plant metabolite compounds have shown characteristic inhibition of cancer cell activity, such as inhibiting the proliferation of cancer cells and inducing apoptosis. **Objectives:** Aim of this study to explore the cytotoxic activity of flavonoid compounds contained in *Eriocaulon cinereum* R.Br against breast cancer cells (T47D). **Material and Methods:** *Eriocaulon cinereum* was collected from Bangka Belitung island. It was extracted with ethyl acetate and fractionated with dichloromethane using Vacuum Liquid Chromatography (VLC). Flavonoid compounds were separated from the dichloromethane fraction of *Eriocaulon cinereum* using the Preparative Thin Layer Chromatography. Identification of compounds was carried out with the thin layer chromatography to ensure the presence of flavonoid. The evaluation of cytotoxic activity was carried out with MTT-assay method. **Results:** This study revealed that the flavonoid compounds of the dichloromethane fraction *Eriocaulon cinereum* R.Br were successfully separated using Preparative Thin Layer Chromatography and gave a bright green color that appeared under UV₃₆₆. The result of cytotoxic activity in vitro with MTT₃₆₆-assay showed that the flavonoid compounds contained in *Eriocaulon cinereum* R.Br were cytotoxic against T47D breast cancer cells with IC₅₀ values of 136.54 µg/ml. **Conclusion:** Flavonoid compounds contained in *Eriocaulon cinereum* R.Br have a cytotoxic activity against T47D cells and has the potential to be further developed as an alternative breast cancer therapy.

KEYWORDS: Cancer cells, *ericaulon cinereum*, flavonoid, T47D

ID 57. The Chronic Obstructive Pulmonary Disease (COPD) Assessment Test: Prediction of Therapeutic Outcome Patients of Private Hospitals in Yogyakarta

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Introduction: COPD is a chronic airflow disorder with the fourth highest mortality rate in the world. COPD doesn't have special therapy that can cure the disease, but standard therapy can inhibit the development of the disease. COPD Assessment Test (CAT) has been increasingly used to assess the therapeutic outcome prediction of COPD patients. **Objectives:** To predict of therapeutic outcome in COPD patients using CAT in private hospitals Yogyakarta. **Materials and**

Methods: This was a cross-sectional study involving one hundred fifty-six patients, aged >40 years who had completed the CAT questionnaire. CAT scores were categorized into four groups, successful therapeutic (CAT scores <10), moderate successful CAT 10–19), less successful (CAT scores 20–30), unsuccessful (CAT score > 30). The study was conducted from April to June 2018 at two private hospitals in Yogyakarta, followed by descriptive-analytical data processing. **Results:** In total, 64.1% of patients were male, and 35.9% of patients were female. The majority of patients had moderate airflow severity. The therapeutic outcome of COPD was 56.41% successful (CAT score: <10), 41.67% moderate successful (CAT score: 10–19), 1.92% less successful (CAT score: 20–30) and there was no patient with unsuccessful therapy. **Conclusion:** Prediction of the therapeutic outcome COPD patients using CAT has been a successful more than fifty percent patients of the private hospitals in Yogyakarta.

KEYWORDS: *Chronic obstructive pulmonary disease (COPD), COPD assessment test (CAT), therapeutic outcome*

ID 58. Evaluation of Antinociceptive Profile of Chalcone Derivative (3-(2,5-dimethoxyphenyl)-1-(5-methylfuran-2-yl) prop-2-en-1-one (DMPF-1) in vivo

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Introduction: Pain is a major global health issue where its pharmacotherapy prompting unwanted side effects; hence, development of effective alternatives compound from natural derivatives with lesser side effects is clinically needed. Chalcone; the precursors of flavonoid and its derivatives have been widely investigated due to their pharmacological properties and safety profile. **Objectives:** The present study addressed the therapeutic effect of 3-(2,5-dimethoxyphenyl)-1-(5-methylfuran-2-yl) prop-2-en-1-one (DMPF-1); new chalcone derivative, on antinociceptive activity *in vivo* since there was a scarcity of its analgesic activity. **Materials and Methods:** The antinociceptive profile was evaluated using acetic acid-induced abdominal writhing, hot plate and formalin induced paw licking test. Furthermore, Capsaicin, Phorbol 12-Myristate 12 Acetate (PMA) and glutamate-induced paw licking test were carried out to evaluate their potential effects towards different targets. **Results:** It was

demonstrated that the doses of 0.1, 0.5, 1 and 5 mg/kg of DMPF-1; given via intra peritoneal injection exhibited significant reduction in writhing response, increased the latency time in hot plate test and reduced time spent on licking the injected paw in formalin and dose contingency inhibition was observed. The similar results were observed in capsaicin, PMA and glutamate-induced paw licking test. In addition, the challenged with non-selective opioid receptor antagonist (naloxone) with aimed to evaluate the involvement of opioidergic system showed no reversion in analgesic profile in formalin and hot plate test. **Conclusion:** Collectively, this study showed that DMPF-1; markedly inhibit both peripheral and central nociception through the mechanism involving the interaction with vanilloid and glutamatergic system regardless the activation of opioidergic system.

KEYWORDS: (3-(2,-dimethoxyphenyl)-1-(5-methylfuran-2-yl) prop-2-en-1-one, antinociceptive, abdominal writhing, chalcone, glutamatergic, hot plate, opioidergic, TRPV-1

ID 59. *Erythroxylum cuneatum* Regulates the Cell Adaptation Through the ERK 1/2 Signalling in Addictive Morphine-induced Cell Line

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Introduction: Chronic treatment of morphine stimulates prolonged activation of the μ -opioid receptor, causes the stimulation of cellular adaptation through ERK 1/2 pathway. The abrupt termination of chronic morphine was observed to cause withdrawal activity through the same pathway. The alkaloid extract of *Erythroxylum cuneatum* was proposed to have anti-withdrawal properties against morphine, regardless of lacking information on the cellular adaptation. **Objectives:** The *in vitro* study, using the neuroblastoma cell line; SK-N-SH, was designed to observe the morphine withdrawal activities in the cellular adaptation perspective against the plant extract and methadone. **Materials and Methods:** To achieve the objective, the cells were pre-treated with morphine. Meanwhile, to observe the antagonistic activity, the cells were co-treated with morphine and plant extract or morphine with methadone. The protein expression

of respective proteins for cellular adaptation; mitogen-activated protein (MAP)/extracellular signal-regulated (ERK) kinase 1/2 (MEK 1/2), extracellular signal-regulated kinase 2 (ERK 2), cAMP-dependent protein kinase (PKA), protein kinases C (PKC), were obtained from western blot technique. **Results:** The finding showed pre-treated cell with morphine expressed higher content of MEK 1/2, ERK 2, PKA and PKC, as compared to co-treatment of morphine. In regards, the co-treatment and post-treatment of methadone and extract of *E. cuneatum* were evaluated to normalise the changes affected by morphine, comparable to the control group. **Conclusion:** *E. cuneatum* was postulated to have anti-withdrawal property mimicking the methadone and react on the same pathway with methadone and morphine observed through antagonistic activity. *E. cuneatum* was suggested to normalise the effect of chronic morphine via ERK 1/2 signalling pathway.

KEYWORDS: Cellular adaptation, *erythroxylum cuneatum*, ERK 1/2 signalling pathway, morphine addiction

ID 60. Gastric Ulcer Preventive Activity of Ethanol Extract of *Muntingia calabura* L. Fruits Using Aspirin-induced Gastric Ulcer Rat Model

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Introduction: Nonsteroidal anti-inflammatory drugs (NSAID), particularly over-the-counter ones, have been used by people to relieve pain and inflammation symptoms on their disease. However, gastric ulcer is common side effect experienced by NSAID user. *Muntingia calabura* L. leaves was proven as gastric ulcer prevention. **Objectives:** The aim of this study is to determine *M. calabura* fruit activity for preventing ulcer using aspirin-induced gastric ulcer in rat model. **Materials and Methods:** Thirty male Wistar rats were divided become six groups: normal (CMC 0.5%), negative (CMC 0.5%), positive control (omeprazole 20 mg/kg), treatment group (ethanol *Muntingia calabura* L. fruit extract): I (100 mg/kg), II (200 mg/kg), and III (300 mg/kg) and given orally once a day for 9 days. On the 10th day, aspirin at a dose of 500 mg/kg was given to all groups except the normal group. Four hours after induction, all animals were sacrificed. Preventive effect against stomach ulcer were determined by calculating the index of ulcer and histopathological examination. **Results:** Index ulcer of *M. calabura* fruit extract at all dose were different than negative group, although not significant ($p < 0.05$). Histopathological examination of *M. calabura* extract at a dose of 300 mg/kg showed few inflammatory cells and congestion compared with the other treatment group. **Conclusion:** Ethanol *Muntingia calabura* L. fruit extract at a dose 300 mg/kg gave best activity in preventive of gastric ulcer.

KEYWORDS: *Aspirin, gastric ulcer, muntingia calabura L. fruit*

ID 61. Effects of Flaxseed (*Linum Usitatissimum*) Extract on Osteoblast Differentiation of Stem Cells Derived from Human Exfoliated Deciduous Teeth (SHED)

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Introduction: Flaxseed extract promotes bone health and possibly functioned in inducing bone regeneration process. SHED (stem cell from exfoliated deciduous teeth) has been considered as an alternative source of MSC in tissue engineering because of their potential to differentiate into multiple cell-lineages including osteoblast. Although flaxseed extract has been shown to affect bone formation process, its effect in inducing stem cell into osteoblast lineage has not been reported. **Objectives:** To determine the effects of flaxseed extract on osteoblast differentiation potential of SHED. **Materials and Methods:** SHED cultured in osteoblast induction media (OIM) was treated with flaxseed extract at 4mg/ml. The RNA was collected and extracted with Total RNA Mini Kit (Geneaid) from cells cultured at day 1, 3, 7, 14 and 21 and subjected to reverse-transcriptase PCR for osteoblast markers (*OSX, OCN, DMP1*). Alkaline phosphatase activity was determined by ALP assay and Alizarin Red S staining was performed to evaluate calcium deposits in SHED. **Results:** All osteoblast markers were expressed in all samples analysed. Interestingly, the expression of *OSX* appeared to be reduced in SHED treated with flaxseed extract. In addition, SHED treated with flaxseed extract resulted in low ALP activity compared to control ($p < 0.05$) (t-test). Calcium deposition was positive in SHED cultured in OIM only. **Conclusion:** Flaxseed appears to reduce the expression of osteoblast markers, ALP activity and calcium deposition in SHED. This suggests that flaxseed as a potential inhibitor of osteoblast differentiation of SHED.

KEYWORDS: *Alizarin red s staining, ALP activity, DMP1, flaxseed extract, osteoblast differentiation, OSX, OCN, SHED*

ID 62. Identifying Predictors of Treatment Nonadherence among Long Term Cancer Survivors

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Introduction: Nonadherence to treatment include refusals, delays, and/ or discontinuation of cancer treatment and routine patient follow-up which can lead to poorer clinical outcomes such as treatment resistance, disease progression as well as lower survival.

Objectives: The objective of this study was to identify the predictors of nonadherence to cancer treatment among long term cancer survivors. **Materials and Methods:** This was a prospective longitudinal study conducted in a cohort of consecutively recruited adult patients (aged ≥ 18 years) with various cancer types within one month of diagnosis at a single oncology referral centre. Cancer survivors at the 5-year follow-up underwent face-to-face clinical interviews using the Structured Clinical Interview for DSM-5 (SCID; Diagnostic and Statistical Manual of Mental Disorders). Information on patient nonadherence to cancer treatment (chemotherapy, radiotherapy and/ or hormonal therapy) and non-attendance of follow-up visits were extracted from medical records. A binary logistic regression was used to identify predictors of treatment nonadherence, expressed in odds ratios.

Results: A total of 186 (39.8%) cancer survivors out of the original cohort sample of $N=467$ patients with cancer reported nonadherence to treatment at some point during their 5-year cancer survivorship. Older cancer survivors aged ≥ 55 and above were 1.88 times more likely to not adhere to treatment, as were those with a comorbid mood disorder at approximately 1-year follow-up who were 1.71 times more likely than survivors without a mood disorder to not adhere to treatment. The presence of a comorbid mood disorder at 5-years follow-up predicted treatment nonadherence in this sample of cancer survivors.

Conclusion: Findings suggest that older cancer survivors with psychological comorbidity may be at higher risk of being nonadherent to treatment.

KEYWORDS: *Anxiety, cancer, depression, posttraumatic stress disorder (PTSD), structured clinical interview for DSM-5 (SCID)*

ID 63. Characteristics of Electronic Cigarette and Vape Users in Malaysia: Lessons from Decision Tree Analysis

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Introduction: The use of electronic cigarette and vape (ECV) among adults has been rapidly in Malaysia. **Objectives:** The primary objective of this paper is to understand the characteristics of ECV users in Malaysia by assessing the perceptions and demographic variables. The influence of perceptions and demographic variables were assessed on the current status of ECV use. Several predictor variables included in this study were: seven demographics variables (i.e., age, gender, race, residence, marital, occupation and education) and twenty variables on the perception of ECV use. An Induction Decision Tree (ID3) algorithm, one of the renowned data mining technique, was used in this study. **Materials and Methods:** A number of simulations was carried out on the dataset which was extracted from the National Electronic Cigarette Survey (NECS) 2016. **Results:** The result of this study shows that the most critical variable identified in this study was gender, hence indicates decision for ECV uses significantly differs among male and female. **Conclusion:** The findings of this study would contribute towards strategizing public health campaign on smoking cessation.

KEYWORDS: Decision tree, data mining, electronic cigarette, vape, survey

ID 64. Isolation and Identification of Piperine from Black Pepper (*Piper nigrum* L.) as Standard Material at Pharmacy Biology Laboratory

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Introduction: Piperine is one of the compounds contained in black pepper (*Piper nigrum* L.). Piperine has been widely known to have pharmacological activity. Currently, many traditional medicinal products have been developed that use black pepper as raw material and require piperine compounds as quantitative and qualitative marker compounds. However, to obtain a piperine standard requires less cost and time. **Objectives:** Aims of this study to obtain one of the cheaply, quickly and easily isolation methods and it will be used as a compound marker for traditional medicinal products. **Material and Methods:** This research uses black pepper fruit from Yogyakarta. The black pepper fruit is then dried at the same temperature of 40°C, then extracted by maceration method, which is then followed by the recrystallization process to obtain piperine isolates. **Results:** Data obtained from this study were TLC profiles and the results of measurements of isolates and piperine

standards were read using TLC Densitometer. Based on the results of testing and measurements in this study, the same R_f value was obtained, namely standard R_f 0.77 while R_f isolate was 0.77. For the chromatogram profile and the maximum wavelength, the result is also the same, namely 338 nm. **Conclusion:** Based on the results of the study it can be concluded that piperine compounds can be obtained from the isolation process of black pepper plants (*Piper nigrum* L.) and piperine isolates can be used as standard materials for practicing Natural Material Chemistry in the UII Pharmacy Biology laboratory.

KEYWORDS: Marker, piperine, TLC

ID 65. Optimization of Extraction Method for Andrographolide Standard from *Andrographis paniculata* (Burm.f.) Nees

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Introduction: Andrographolide is the dominant compound found in bitter plants (*Andrographis paniculata* (Burm.f.) Nees). Andrographolide is also known as a compound that has pharmacological effects. The post-harvest process to extraction is a very important step to obtain the amount of andrographolide content. In this study three extraction methods were conducted with maceration, ultrasonic and magnetic stirrer. **Objectives:** The purpose of this study was to see the best method of extracting the andrographolide content produced. **Material and Methods:** This research uses *A. paniculata* plants from Yogyakarta. The plants are then dried with the same temperature of 40°C. *Simplicia* of *A. paniculata* was extracted by maceration, ultrasound assisted extraction, maceration with the help of magnetic stirrer with ethanol 70% as solvent. This study used TLC densitometer for analysis the andrographolide content. **Results:** Based on the results of measurements and calculations in this study, the average weight of the largest andrographolide crystals in the treatment of conventional maceration techniques, which is equal to 1.0080 grams. The average levels of andrographolide compounds were highest in conventional maceration techniques, namely 3.9335 mg/ml. **Conclusion:** This study concluded that the use of maceration extraction techniques was more effective in extracting andrographolide even though it took longer.

KEYWORDS: Andrographolide, extraction, standard material

ID 66. Benzodiazepine Prescribing Trends over 3 Years at Malaysia Public Hospital

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Introduction: Despite evidence of their association with adverse drug events and mortality, benzodiazepines are still the favourites for treating many psychiatric disorders and neurological conditions. To date, there is a meager data on the prescribing trends of benzodiazepines in this country. **Objectives:** This study aimed to investigate the trends of benzodiazepines prescribing at Malaysia public hospital using prescription data. **Materials and Methods:** An observational, cross-sectional, retrospective study was performed using the prescriptions from January 2014 to December 2016 received by the outpatient pharmacy of HTAA. Prescriptions for adult patient (age ≥ 18 years old) with benzodiazepine were identified and evaluated. STATA® SE v.13.1 was used for data analysis. **Results:** Over the three years, prescriptions of benzodiazepine fall approximately 12.63%, prescriptions for male patient's decreased by 4.7%, while prescriptions for Malay recipient shown little increase of 0.77%. Rapid action benzodiazepines decrease to 4.47% while intermediate action rose around 3.49%. Alprazolam was the most frequently prescribed, but it was gradually decreased from 43.25% in 2014 to 36.76% in 2016. The prescribed daily dose (PDD)/patient/year had a steady incline every year, with 132.8 in 2014, 151.594 in 2015 and 162.199 in 2016, whereby the defined daily dose (DDD)/1000patients/year fall from 86.66DDD in 2014 to 77.65DDD in 2016. **Conclusion:** Most of the result exhibits an increasing trend from 2014 to 2015, but dramatically fall in 2016. These findings suggest that there are changes in prescribing practice in the institution studied. It also amplifies the demands for further investigation, including the need for longitudinal studies of benzodiazepines for more conclusive trend.

KEYWORDS: *Benzodiazepines, malaysia, prescribing trends, prescription*

ID 67. Screening of rs6194 Single Nucleotide Polymorphism (SNP) and Its Association with Hypertension among Malay Obese Respondents

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Introduction: Hypertension is one of the commonest diseases in Malaysia that indirectly increase the risk of cardiovascular disease, while obesity is the state of being excessive in body fat. The overall prevalence of hypertension and obesity among Malaysian adults in 2015 was recorded as 30.3% and 17.7%, respectively. The rs6194 single nucleotide polymorphism (SNP) is one of the

alterations of the DNA sequence at exon 6 of the NR3C1 receptor. **Objectives:** Thus, this study was aimed to screen for the rs6194 SNP in the NR3C1 gene of human obese subjects by using PCR technique and DNA sequencing methods. **Materials and Methods:** A total of 243 Malay human blood samples were collected, in which consist of 127 obese and 116 normal lean subjects. The DNAs were extracted and the rs6194 polymorphisms were identified among the respondents' samples. **Results:** There were 72 (29.6%) samples detected as heterozygous, while the remaining were the wild types. Among the 72 heterozygous samples, only 23 (31.9%) were the obese, while 49 (68.1%) were the normal lean. The obese, heterozygous samples were further classified based on the blood pressure level, in which six of them (26%) were hypertensive, while 17 (73.9%) were normotensive. Odds ratio (OR) was calculated to assess the relationship between the rs6194 SNP with hypertension and obesity. The obese mutants were 0.41 less likely to develop hypertension in relation to the rs6194 polymorphism. **Conclusion:** In conclusion, it can be suggested that the rs6194 polymorphism is associated with reduced prevalence of hypertension among the Malay obese.

KEYWORDS: *Hypertension, obesity, odds ratio, rs6194, single nucleotide polymorphism*

ID 68. Prescription Patterns of Benzodiazepines among Malaysian Adults Population

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Introduction: Quantifying benzodiazepine usage in populations helps to reconfirm the current prescribing practices and pinpoint the existence of problematic consumption patterns that could be prophetic for major adverse outcomes. Regardless of a large number of prescriptions issued, little is known about the prescribing patterns of benzodiazepine in Malaysia. **Objectives:** This study aimed to examine the prescribing patterns of benzodiazepines among adults population in tertiary care hospital in Kuantan. **Materials and Methods:** An observational, cross-sectional, retrospective study was conducted among adult patients (age ≥ 18 year old) attending the outpatient pharmacy of HTAA. Considering the inclusion and exclusion criteria, data were retrieved from prescription slips starting from January 2014 to December 2016. The statistical package Stata, v.13.0 (Stata Corp LP) was used for data analysis. **Results:** About 51.4% (n=2945) prescriptions were issued for male patients, 56.7% (n=3252) are among

Malays and patient within the age band of 45-54-year-olds (29.4%, n=1685) is the highest recipient. 69% (n=6218) of benzodiazepines prescribed were for a one-month duration, while 7.86% (n=702) was prescribed for more than one month. Approximately 57% (n=5115) of benzodiazepines were prescribed with regular dosing schedule rather than as per needed (PRN) dosing. Majority (79%, n=4557) prescriptions were generated from the psychiatric department, whereas 31.58% (n=1809) were indicated for patient with mood disorders. **Conclusion:** Male, Malay and older adult of 45 years old and above reflect the pattern in this study. Future studies covering a broader region in Malaysia are proposed to further investigate the indication, adverse effect and clinical outcomes of benzodiazepines usage.

KEYWORDS: Benzodiazepines, malaysia, prescribing pattern, prescription data, retrospective

ID 70. Corporate Smoking Cessation Programme; A Pilot Initiative

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Introduction: Barriers to quit smoking among working adults include the financial burden associated with smoking cessation and the lack of time due to work commitment. **Objectives:** To report the proportion of participants that reduced or quit smoking in a smoking cessation programme provided to the employees of a company and the associated cost burden reduction. **Materials and Methods:** This was a pilot study employing a pre- and post- design. A community pharmacy in Kuala Lumpur approached a company in Kedah to provide a smoking cessation programme at their premise. The company fully sponsored this 12-week programme. Inclusion criteria were smokers working in the company, limited to 15 participants. Participants were seen in a group for goal setting, managing expectations and sharing sessions; and individually for the review sessions. At each review session, the pharmacist recorded the withdrawal symptoms experienced, smoking status, challenges encountered in quitting and pharmacotherapy plan. The data was tabulated and analysed descriptively using an Excel Spreadsheet. **Results:** There were 15 participants initially, 13 dropped out. Three participants reduced the number of cigarettes smoked (including two participants who dropped out) and one successfully quit smoking entirely. The estimated total cost reduction per month per participant was RM 213.15. **Conclusion:** While the programme reported positive impact among those who completed it, majority of participants dropped out due to their inconsistent working hours, lack of support from direct supervisors and non-conducive working environment. Future initiatives should address these limitations and use it as a guide in promoting smoking cessation among working adults.

KEYWORDS: Community pharmacy, cost burden reduction, pilot, smoking cessation, working adults

ID 71. Perceived Stress, Quality of Life, and Their Correlation amongst Undergraduate Pharmacy Students: Findings from a Public University in Malaysia

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Introduction: Stress as a psychological disorder might affect an individual's physical, mental and emotional aspects at any age. Although university students who experience acute stress still can adapt to it; however, chronic stress may lead to substantial issues. It has been reported that health-related university studies convey a high level of stress, which could adversely affect students' health as well as their quality of life (QOL), and pharmacy is no exception. **Objectives:** The aims of the study were to evaluate the stress level and its correlation with QOL among pharmacy students. **Materials and Methods:** In a cross-sectional study, all undergraduate students (N = 456) of Faculty of Pharmacy, International Islamic University Malaysia, were planned to be surveyed. The stress level was evaluated using Perceived Stress Scale (PSS), whereas World Health Organization QOL questionnaire (WHOQOL-BREF) was used for QOL measuring. Descriptive and inferential analyses were run using SPSS Version 21.0. **Results:** Of the 277 students responded (72.2% females), 68.9% were moderately stressed ($M = 21.9 \pm 6.4$). No significant differences in PSS score were found between different years of study ($p = 0.75$). A significant negative correlation was also observed between PSS score and WHOQOL-BREF score ($p < 0.001$). **Conclusion:** Although it is of moderate intensity, perceived stress can negatively impact pharmacy student's QOL, therefore, counselling sessions should be considered throughout the years of pharmacy study.

KEYWORDS: Perceived stress, pharmacy, quality of life, students, undergraduate

ID 73. In Vitro Anti-proliferative Properties of Artocarpus heterophyllus Bioactive Derivatives in Cancer Cell Lines

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Introduction: Cancer is one of the most fatal diseases all over the world. However, extensive studies were built to reduce the cancer cases using natural compounds in treating cancer. One of the most common herbs used in Malaysia is *Artocarpus heterophyllus*, a jackfruit from Moraceae family. Despite having many important applications traditionally, only few studies have been conducted to explore its potential pharmacological properties. **Objectives:** This study was designed to evaluate the anti-proliferative activities of five isolated compounds in *A. heterophyllus* on few cancer cell lines and to investigate the apoptotic morphology of each cancer cell upon treatment. **Materials and Methods:** All isolated compounds were obtained from antibacterial assay-guided isolation process in previous study and were evaluated for cytotoxic activity against cancer cells using MTT assay. The cytological observation was made using inverted and fluorescent microscope with Hoechst 33342/PI staining assay. **Results:** Analyses showed that artocarpin consistently exhibited strong cytotoxic activity against lung cancer, colon cancer, breast cancer, and leukemia compared to the other four artocarpus compounds with IC_{50} values of 5.46, 5.56, 12.53, and 19.94 $\mu\text{g/mL}$, respectively, comparable to the cisplatin drug. Morphological observations showed most typical apoptotic morphology of cancer cells upon treatment with artocarpin and less typical of apoptotic structure with other compounds. **Conclusion:** It thus can be suggested that artocarpus compound modulates apoptosis by the presence of the distinctive, typical forms of morphological changes in apoptotic cells in treating cells. Thus, artocarpin compound with its prenylated flavonoid structure provides potential therapeutic use in chemotherapeutic strategies.

KEYWORDS: *Artocarpus heterophyllus*, anti-proliferative, cytotoxicity, morphology

ID 74. Protective Effect of Methanolic Extract of *Nardostachys jatamansi* Rhizomes on Aspirin plus Pylorus Ligation-induced Gastric Ulcer in Experimental Animals

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Introduction: Ulcer is disruption in the continuity of the stomach mucosa. Peptic ulcer arises due to imbalance

between the aggressive factors and defensive factors. *Nardostachys jatamansi* DC (family Valerianaceae) is an herbaceous plant and its rhizome is a therapeutic herbal agent. **Objectives:** To evaluate the gastroprotective activity of methanolic extract of *Nardostachys jatamansi* rhizomes (MENJ) using aspirin plus pylorus ligation model. **Materials and Methods:** The plant material of *Nardostachys jatamansi* was collected, dried under shade, made into powder and extracted with methanol using soxhlet apparatus. The extract was screened for alkaloids (Mayer's and Wagner's test), tannins (Gelatin test) and flavonoids (Shinoda test). The rats were divided into four groups of six each; control (0.3% CMC), standard (Omeprazole 10mg/kg), MENJ 100 and 200mg/kg. Aspirin (200mg/kg) was administered orally once daily for 5 days. On 6th day MENJ was administered to test group and Omeprazole 30min before pylorus ligation. After four hours the animals were sacrificed, stomach was excised and the gastric juice was collected, centrifuged and biochemical analyses i.e. pH, gastric volume, free acidity, total acidity and proteins and ulcer index were performed. **Results:** There was a significant ($p < 0.001$) increased pH (4.46 ± 0.37) and decrease in ulcer index (1.72 ± 0.48), gastric volume (2.92 ± 0.25), free acidity (29.46 ± 0.85), total acidity (53.42 ± 1.26) and total proteins (283.42 ± 15.49) when compared with control. Test dose of 200mg/kg also showed significant effect ($p < 0.01$) when compared with Omeprazole. **Conclusion:** The present study revealed that the MENJ possesses gastroprotective activity due to the presence of alkaloids, tannins and flavonoids.

KEYWORDS: Aspirin, *nardostachys jatamansi*

ID 75. Prevalence of Awareness, Attitude, and Practice Towards Tobacco Use Among General Public in Kuantan

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Introduction: Several studies had been conducted to assess the awareness, attitude and practice of a specific population towards cigarette smoking. However, other tobacco products are mostly neglected. In Malaysia, many tobacco products such as cigarettes, hand-rolled tobacco, shisha, cigar, pipe and chewy tobacco are easily accessible. Yet, there are no established studies of tobacco use specifically among general public in Kuantan. **Objectives:** This study aimed to estimate the prevalence of tobacco use among Kuantan general public

and to assess the awareness, attitude and practice towards tobacco use. **Materials and Methods:** This is a cross-sectional study. A pre-tested, structured, self-administered questionnaire was administered to convenience sample (N = 202) in Kuantan from October to December 2018. Questionnaire was validated by experts and a pilot study was conducted to establish its reliability. Data was analysed by SPSS using descriptive as well as inferential analysis. **Results:** The prevalence among the respondents was 43.6% (n = 88), in which 98.2% were males. Most of the respondents reported high awareness (91.1%) about tobacco use with highest scores being achieved by males and those between 38 and 47 years old (96.0%). Majority of respondents demonstrated positive attitude (97.02%) towards tobacco use, particularly among females and those between 38 and 47 years old (100%). In terms of practice, almost 50.5% reported poor practice, especially female and those who are between 18 and 27 years old. **Conclusion:** The prevalence of tobacco use among general public of Kuantan is considered high. Most of the people in Kuantan have good awareness and attitude, however their practice towards tobacco use was poor.

KEYWORDS: Awareness, attitude, kuantan, malaysia, prevalence, practice, smoking

ID 76. A Scoping Review of Antimicrobial Stewardship Programs in the Hospital Wards on the Interventions and the Patient Outcomes

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Introduction: The overuse of antibiotics has led to various healthcare problems such as the emergence of resistance in infectious microbes and mortality due to antibiotic resistant healthcare associated infections (HAIs). An antimicrobial stewardship (AMS) program is the set of interventions used worldwide to enhance the rational use of antibiotics especially for the hospitalized patients. **Objectives:** This review aimed to describe the characteristics of the implemented AMS programs in various hospitals of the world, mainly to focus on the interventions and patients outcomes. **Materials and Methods:** The literature about AMS program were searched through various databases such as PubMed, Google Scholar, Science Direct, Cochrane Library, Ovid (Medline), Web of Science and Scopus. **Results:** In this review the literature pertaining to the AMS programs for hospitalized patients is sorted on the basis of various interventions that are categorized as formulary restriction (pre-authorization), guideline development, clinical pathway development, educative interventions and

prospective audit. Moreover a clear emphasis is laid on the patient outcomes obtained as a result of these interventions namely the infection control, drop in readmission rate, mortality control, resistance control and the control of an overall cost of antibiotic treatment obtained mainly by curbing the overuse of antibiotics within the hospital wards. **Conclusion:** AMS program is an efficient strategy of pharmacovigilance to rationalize the antimicrobial practice for hospitalized patients as it prevents the misuse of antibiotics, which ultimately retards the health threatening effects of various antibiotics.

KEYWORDS: Antimicrobial stewardship (AMS) program

ID 77. Effect of Drugs in Chronic Diseases on Cognitive Impairment and Memory Loss: Call for Effective Pharmaceutical Care in Pakistan

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Introduction: The use of chronic disease medications poses risk for cognition and memory. The current research assesses cognitive impairment and memory loss among chronic disease patients in twin cities of Pakistan. **Materials and Methods:** A descriptive cross-sectional study design was used. A pre-validated data collection tool i.e. Mini Mental State Examination (MMSE) questionnaire was distributed to a sample of 1528 patients of hypertension (n = 382), diabetes (n = 382), epilepsy (n = 382) and depression (n = 382). After data collection the data was cleaned, coded and statistically analyzed using SPSS version 21. **Results:** Out of 382 hypertensive patients, 31.5% (n = 121) had normal cognition level, 53.4% (n = 202) had mild cognitive decline and 15.4% (n = 59) showed moderate cognitive decline while majority of the diabetes patients did not show cognitive impairment and memory loss. Out of 382 epileptic patients, 60.5% (n = 231) had normal cognition level while only 10.5% (n = 40) had moderate cognitive impairment. In case of 382 depressive patients, 7.3% (n=28) were being prescribed amytryptiline and among them 46% (n=13) had questionably significant cognitive impairment A mere 23% (n=89) on escitalopram monotherapy and 85% (n=76) had weakening of significant impairment. **Conclusion:** Majority of the hypertensives while few diabetics showed mild cognitive impairment and memory loss. Respondents on newer antidepressants showed better cognitive profile while monotherapy was relatively better choice in epilepsy and depression. Pharmacists can be instrumental in

cognitive memory screening and institute monitoring services in community pharmacies in Pakistan.

KEYWORDS: *Chronic diseases, cognitive impairment, memory loss, pakistan*

ID 78. Physicians Perception of Treating Sepsis in Critical Care Units of Karachi, Pakistan

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Introduction: In order to be competent in the diagnosis and treatment of sepsis it is imperative to get more insight into physicians' perception and knowledge regarding their current practice of managing sepsis patients. **Objectives:** This study was aimed to assess perceptions the physicians of Karachi, involved in the management of sepsis patients in critical care units of Karachi. **Materials and Methods:** It was a cross-sectional, descriptive research executed for 6 months, i.e. April 2018 to September 2018. A pre-validated structured questionnaire was used as research instrument. Data was statistically analyzed with one-way ANOVA and Chi-Square. A *p* value of less than 0.05 was considered significant. **Results:** A response rate of 61.5% observed. The internal consistency of the items reported to be 0.8. Majority believed that sepsis is an important cause of mortality and deemed that its treatment is one of the unmet needs in critical care today. Around 41% viewed sepsis as a systemic response, 21.1% considered sepsis as syndrome whereas 15.4% attributed it as disease. Majority (65.85%) cited increased bacterial resistance as the major reason of increased incidence rate. Procalcitonin (PCT) (64.2%), bacterial culture (62%) and haemodynamic monitoring (56%) were considered as main diagnostic markers of sepsis. **Conclusions:** The study concluded that physicians considered sepsis as an important cause of mortality and viewed as considerable burden on the healthcare system in Pakistan.

KEYWORDS: *Physicians, procalcitonin, Sepsis*

ID 79. Perception of Future Pharmacy Practitioners towards Generic Medicines: Findings from Public Institutes, Karachi, Pakistan

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Introduction: Before the implementation of generic substitution, it is imperative to instill confidence for generic medicines among health care professionals and consumers alike. **Objectives:** The current research is aimed to explore the perception of future pharmacy practitioners towards generic substitution. **Materials and Methods:** This is a cross-sectional study design in which final year pharmacy students from all four government-sector universities of Karachi participated. Data were collected through a 20-item pre-tested questionnaire. A total of n = 395 pharmacy students invited. Data was collected from all public universities and subjected to SPSS version 22 and analyzed for descriptive and inferential statistics. **Results:** The respondents were 79.8% females with a mean age of 23.5 years. More than 75% claimed that all generic products of a particular medicine that are rated as "generic equivalents" are therapeutically equivalent to the innovator brand product. Around 60% affirmed that a generic medicine must contain the same dose as the brand name medicine whereas 64% negated that generic medicines are less effective and produce more side-effects than brand name medicines. A large majority (94%) reported to need more information on the issues pertaining to the safety and efficacy of generic medicines. **Conclusions:** The current study acknowledged an optimistic insight toward generic medicines however; there were some misconceptions in the understanding of the bioequivalence. The current pharmacy curriculum must address these concerns to promote the rational use of generic medicine in Pakistan.

KEYWORDS: *Final year pharmacy students, generic medicine, knowledge, Pakistan, perception*

ID 80. Health Care Professionals' Practice of Managing the Occupational Blood-Borne Pathogens Exposures and Recommendations for Post-exposure Prophylaxis

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Introduction: Health care professionals (HCPs) are likely to have occupational injuries and expose themselves to blood-borne pathogens. It is imperative to ascertain the management of occupational exposures and recommendations for post-exposure prophylaxis (PEP). **Objectives:** The present study was conducted to evaluate the knowledge and practice of HCPs for the management of occupational exposures and their recommendation for post-exposure prophylaxis (PEP). **Materials and Methods:** A cross sectional study was conducted from October 2018 to February 2019 in different tertiary health care settings of Karachi, Pakistan. HCPs were interviewed using a pre-validated, structured questionnaire. Data entered SPSS version 18 and descriptive statistics applied. A *p* value of less than 0.05 considered significant. **Results:** A response rate of 73.4% observed. Respondents included physicians (43.1%), medical students (32.3%), lab technicians (23.8%) and nurses (0.8%). Most common types of occupational exposures were needle stick injuries (21.5%), sample spillage (22.3%) and injury with sharp device (26.2%). Majority (90%) were aware of contributory factors for HCV, HBV & HIV exposures. Around 60% reported awareness of laboratory (lab) tests that are needed to determine the susceptibility to blood borne pathogen infection. Majority (60%) claimed that their institute has policy for management of exposures and provide appropriate training. A large majority (90%) expressed that healthcare facilities should develop a system to monitor reporting and management of such exposures. **Conclusion:** The present study revealed the high level of knowledge of physicians and medical students; however, the lab technicians and nurses possess low level. The periodic training could further strengthen the respondent understanding, expected to reduce disease transmission.

KEYWORDS: Healthcare professional, occupational exposure, pakistan, post-exposure prophylaxis

ID 81. Investigation of α -Glucosidase Inhibitory Activity of *Tetracera scandens* Leaf using Fourier Transform Infrared Spectroscopy-based Metabolomics

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Introduction: *Tetracera scandens* is a shrub that belongs to Dilleniaceae family. The leaves of this plant have medicinal values and traditionally been used in the treatment of diabetes mellitus in Malaysia. The conventional quality control analysis of medicinal plants that relies on the quantification of few major metabolites is considered time-consuming since it requires extensive sample preparation and neglects the possible impacts that the other metabolites could have on the activity. **Objectives:** This study was aimed to investigate the α -glucosidase inhibitory (AGI) potential of different ratios of water-methanol extracts of *T. scandens* leaves and to establish a predictive multivariate model that could be used for the quality evaluation of *T. scandens* leaf based on the Fourier transform infrared (FT-IR) spectra of its extracts. **Materials and Methods:** Different ratios of solvent (0%, 20%, 40%, 60%, 80% and 100% methanol in water) were used to prepare a total of 36 extracts. The AGI potential and the FT-IR fingerprint spectrum were acquired for each extract. **Results:** A four components OPLS model (1+3+0) with R²Y of 0.951 and Q²Y of 0.916 was established to describe the correlation between the fingerprint FT-IR spectra of different *T. scandens* extracts and their corresponding AGI activities. The carbon-oxygen, carbon-halide single bonds, as well hydroxyl and carbonyl groups were identified to be positively correlated with the AGI activity. **Conclusion:** An OPLS model was successfully developed as a rapid quality evaluation method to predict the AGI activity of *T. scandens* leaves.

KEYWORDS: α -Glucosidase, fourier transform infrared, fingerprinting, multivariate analysis, metabolomics, *tetracera scandens*

ID 82. In vitro Adipogenic Potential and Glucose Uptake Stimulatory Effect of the Terpenoids Isolated from *Tetracera indica* Merr.

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Introduction: Mempelaspaya (*Tetracera indica* Merr.) is used in folk medicines for the treatment of different diseases including diabetes and its related infirmities in Malaysia. This plant has been reported to contain terpenoids and flavonoids as major bioactive constituents. Flavonoids from this plant have earlier been reported for their antidiabetic potential. **Objectives:** The aim of this study was to evaluate the *in vitro* antidiabetic potential

of non-polar compounds to ascertain whether they also contribute antidiabetic effect to *mempelas paya*. **Materials and Methods:** As non-polar compounds, two terpenoids viz. betulinic acid and stigmaterol were isolated from stems ethanol extract through repeated silica gel column chromatography and their structures were characterised NMR spectroscopy. *In vitro* antidiabetic effect was investigated through 3T3-L1 adipocytes and fluorescence glucose (2-NBDG) uptake assays. MTT viability assay was performed on 3T3-L1 pre-adipocytes to confirm the safe concentrations of both compounds. Finally, both terpenoids were subjected to fluorescence glucose (2-NBDG) uptake test on differentiated adipocytes. The cells were treated in different safe concentrations as well as in different adipogenic cocktails, which were modified by the addition of compounds to be investigated and in the presence or absence of insulin. Rosiglitazone was used as standard. **Results:** Betulinic acid and stigmaterol induced significant ($P < 0.05$) adipogenesis like insulin and enhanced adipogenesis like rosiglitazone. Furthermore, both terpenoids also exhibited significant ($P < 0.05$) glucose uptake activity. **Conclusion:** This study is reporting the *in vitro* 2-NBDG uptake evaluation of stigmaterol and betulinic acid for the first time. The present study demonstrated that the non-polar compounds isolated from the *mempelas paya* do possess antidiabetic potential revealing insulin-like and insulin-sensitizing effects which were significant among the compounds.

KEYWORDS: 2-NBDG uptake activity, 3T3-L1 preadipocyte cells, adipogenesis, insulin like activity, insulin sensitizing activity, *tetracera indica merr.*, terpenoids

ID 83. Public Awareness of and Action towards Heart Attack Symptoms: An Exploratory Study in Kuantan, Pahang, Malaysia

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Introduction: Awareness of symptoms and action towards heart attack (HA) are very important to reduce the deaths and disability. **Objectives:** The current research aimed to assess the awareness of symptoms and action towards heart attack among the general public. **Materials and Methods:** A cross-sectional study was conducted in Kuantan from May to July 2018 to recruit 393 respondents via convenience sampling. **Results:** The actual proportions associated with respondents who have been aware of HA symptoms ranged from 26.35% (pain/discomfort in the jaw, neck, back) to 71.65 %

(chest pain, discomfort). While 35.6% of respondents would call ambulance if they see someone suffering from HA symptoms; 82% realized ≥ 1 HA symptom, 11.5% recognized all five HA symptoms and 1.3% had excellent awareness (correct recognition of all five HA symptoms, without response "Yes" to decoy question). The odds ratios (OR) for those who have an excellent awareness of all five HA symptoms were significantly high in those who were single (OR 0.023; 95% CI 0.001–0.594), Malay (OR 0.376; 95% CI, 0.193–0.733), who have a history of HA among their relatives (OR 2.206; 95% CI, 0.983–4.949), who received information associated with HA (OR 7.540; 95% CI, 2.037–27.914) and those who aware that HA requires quick treatment (OR 0.176; 95% CI 0.044–0.710). **Conclusion:** Awareness of HA symptoms and proper action seem to be poor in Malaysia. Educational interventions to increase general awareness among the lay public, specifically in the elderly and who are at high risk for cardiovascular diseases are recommended.

ID 84. Docking Studies and Molecular Dynamics Simulation of Ipomoea Batatas L. Leaves Compounds as Lipoxygenase (LOX) Inhibitor

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Introduction: Inflammatory mediators produced by the cyclooxygenase (COX) and lipoxygenase (LOX) pathways are responsible for many diseases in humans, such as cancer, arthritis, and neurological diseases. Flavonoid-containing plants, such as *Ipomoea batatas* L. leaves has shown potential anti-inflammatory activity. **Objectives:** The purposes of this study was predicting the activities of 10 compounds in *I. batatas* leaves, namely YGM-0a [cyanidin 3-O-sophoroside-5-O-glucoside], YGM-0f [cyanidin 3-O-(2-O-(6-O-(E)-p-coumaroyl- β -D-glucopyranosyl)- β -D-glucopyranoside)-5-O- β -D-glucopyranoside], YGM-1a [cyanidin 3-(6,6'-caffeylp-hydroxybenzoylsophoroside)-5-glucoside], YGM-1b [cyanidin 3-(6,6'-dicaffeylsophor-oxide)-5-glucoside], YGM-2 [cyanidin 3-(6-caffeylsophoroside)-5-glucoside], YGM-3 [cyanidin 3-(6,6'-caffeyl-ferulylsophoroside)-5-glucoside], YGM-4b [peonidin 3-(6,6'-icaffeylsophoroside)-5-glucoside], YGM-5a [peonidin 3-(6,6'-caffeylhydroxybenzoylsophoroside)-5-glucoside], YGM-5b [cyanidin 3-(6-caffeylsophoroside)-5-glucoside] and YGM-6 [peonidin 3-(6,6'-caffeylferulylsophoroside)-5-glucoside] as LOX inhibitor as well as predicting the stability of its ligand-LOX complex. **Materials and Methods:** The study started with compounds screening through docking studies using PLANTS. The molecular dynamics simulation was conducted using GROMACS at 310 K. **Results:** The

results showed that the most significant binding affinity towards LOX shown by YGM-0a, and YGM-0a and LOX complex in molecular dynamics simulation showed stability for 20 ns. **Conclusion:** Based on docking studies and molecular dynamics simulation of *I. Batatas* Leaves compounds, YGM-0a are shown to be the most probable as lipoxygenase (LOX) inhibitors.

KEYWORDS: *Anti-Inflammatory, docking, ipomoea batatas L., lipoxygenase, molecular dynamics*

ID 85. Striatum Hyperactivity Triggers Relapse to Morphine/methamphetamine (Poly-drug) Dependence in Mice

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Introduction: Kappa-opioid receptor (KOPr) system has been linked to relapse to many substances, especially opioids. Positive response was recently reported in morphine/methamphetamine (poly-drug)-dependent mice that were treated with buprenorphine/naltrexone, a functional kappa antagonist. **Objectives:** This study aimed to determine the specific brain region that responsive to KOPr treatment following poly-drug dependence. **Materials and Methods:** The poly-drug-dependent mice model was initially developed using conditioned place preference (CPP) method. Following successful withdrawal phase, the mice were treated with 0.3 mg/kg buprenorphine/1.0 mg/kg naltrexone. Four brain regions (hippocampus, prefrontal cortex, amygdala, and striatum) were investigated using an immunohistochemistry technique. This is to quantify the changes in KOPr expression in each major brain region that were primarily involved in addiction neurocircuits of many substances. Unpaired student's *t*-test was used to analyse all results where $p < 0.05$ is considered significant. **Results:** The results showed that

treatment with buprenorphine/naltrexone successfully attenuated relapse in 60 % of mice ($n = 14$). A significant upregulation of KOPr was detected in striatum at the end of post-withdrawal phase ($p < 0.01$, $n = 12$). This treatment successfully suppressed KOPr in striatum ($p < 0.001$, $n = 12$), which supports the positive results seen in the CPP setting. No significant changes were seen in other brain regions studied. **Conclusion:** The hyperactivity of striatum suggests that the affected brain region following KOPr antagonist treatment is the region that primarily controlled the drug rewarding activity, in which nucleus accumbens is located. This indicates that manipulating the KOPr system is one of the potential targets to treat morphine/methamphetamine dependence problem.

KEYWORDS: *Brain, drug addiction, kappa, methamphetamine, poly-drug*

ID 86. Manipulating the Opioid Receptor System as a Prime Target to Treat Opioid/methamphetamine Dependence in Poly-drug Dependence Mice Model

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Introduction: Growing evidence suggests the involvement of opioid receptors in methamphetamine dependence. However, the exact opioid receptor combination has not yet been established. Taking increasing use of methamphetamine in opioid users into consideration, treating this poly-drug dependence using opioid-based treatment is possible. **Objectives:** This study aimed to establish the opioid receptors profile to treat opioid / methamphetamine (poly-drug) dependence by using buprenorphine (a kappa-opioid (KOPr) antagonist and partial mu-/nociceptin-opioid receptor (MOPr/NOPr) agonists) as a tool. **Materials and Methods:** The poly-drug and mono-drug dependence mice model were initially developed using 7.5 mg/kg morphine and/or 1.0 mg/kg methamphetamine in a conditioned place preference paradigm. Before relapse induction, the mice received a treatment of 0.3 mg/kg buprenorphine with either 1.0 mg/kg naltrexone (MOPr) or naltrexone with 3.0 mg/kg SB 612111 (NOPr), or received 10 mg/kg norbinaltorphimine (KOPr) to antagonise different types of opioid receptor. Unpaired student's *t*-test was used to analyse the results where $p < 0.05$ is considered significant. **Results:** Relapse was successfully attenuated in buprenorphine/naltrexone-treated mice in morphine- and poly-drug-dependent groups with

no significant difference in drug-seeking behaviour compared to the baseline. However, relapse happened in methamphetamine-dependent group that received buprenorphine/naltrexone, and in poly-drug-dependent group that received both naltrexone and SB 612111, in which the drug-seeking behaviour was significantly different compared to its baseline. Norbinaltorphimine successfully attenuated relapse in morphine- and poly-drug-dependent groups. **Conclusion:** The findings suggest that a combination of MOPr antagonist and NOPr agonist is the ideal opioid receptor profiles to treat opioid/methamphetamine dependence. The role of KOPr antagonist, although promising, still need to be further investigated.

KEYWORDS: *Conditioned place preference, CPP, methamphetamine, morphine, opioid*

ID 87. Association Between Knowledge and Reporting Behaviour on Medication Error among Pharmacist in Pahang: A Cross-Sectional Study

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Introduction: Healthcare providers play a vital roles in make sure every patient was receive the safest medication as possible. Unfortunately, medication errors were still commonly occurred in healthcare systems and were underreporting. **Objectives:** Hence, this study aims to find association between knowledge and reporting behaviours on medication error among pharmacists in Pahang. **Materials and Methods:** A cross sectional study was conducted among 186 registered pharmacists in Pahang. Respondents were randomly recruited from 6 hospitals (n=93) and 25 primary Health Care clinics (n=93) by using self-administered Validated Modified Gladstone questionnaires. Study were conducted from January until June 2019. Pharmacists with minimum one year working experience were the inclusion criteria. Data were analysed with Mann-Whitney test, correlation coefficient and descriptive statistical methods. **Results:** Majority of the respondents were females (n=144) and had <8 years working experience (n=150). Results find there were no significant association for knowledge with all domains. Result also show same pattern between reporting behaviour and all domains except for gender where female (Median =2.0, U =1945.5, n= 144, p<0.001) are more likely to report medication error compare with male (Median = 1.0, n= 42).Result also find a weak positive correlation between knowledge and reporting behaviours on medication error (r=0.13, n=186, p=0.085). Moreover, the pharmacists in this study have good knowledge (M=1.7, SD=0.45) and moderate reporting behaviours

attitude (M=2.9, SD= 0.56) towards medication errors. **Conclusion:** Since the results in this study find there were weak positive correlation between knowledge and reporting behaviour, further study can be conducted to identify factors contributing to poor reporting behaviour on medication errors.

KEYWORDS: *Hospital, medication error, MERS, pharmacist, public hHealth, primary care*

ID 88. Synthesis, Antioxidant Potential and Angiotensin Converting Enzyme (ACE) Inhibitory Activity of Magnesium Orotate Loaded/chitosan Inclusion Complex

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Introduction: Nanoparticles remain the best choice for many therapeutic treatments primarily due to the availability of numerous active ingredients. Nevertheless, the challenges of antioxidant and ACEs properties displayed by these active ingredients still exist. The magnesium orotate inclusion complex (MgOr/CHs) were prepared using the GA as stabilizer coatings for inclusion complex through efficient synthesis approach. **Objectives:** The main objective of this study is to synthesis the magnesium orotate inclusion complex and investigate the antioxidant and antihypertensive activity *in vitro* method. **Materials and Methods:** The present study investigated the antioxidant properties and antihypertensive activity of magnesium orotate (MgOr) using various established *in vitro* assays, such as β -carotene bleaching activity, 1,1-diphenyl-2-picrylhydrazyl (DPPH), and nitric oxide scavenging activity as well as angiotensin converting enzyme (ACE) inhibitory activity. The *in vitro* cytotoxicity of magnesium orotate inclusion complex (MgOr/CHs) against human breast cancer MCF7, liver cancer HepG2, and colon cancer HT29 was investigated. **Results:** The exposure of human cancer cells to (MgOr/CHs) 1.56-1000 μ g/mL using MTT (3-(4,5-dimethylthiazol-2-yl) (2,5-diphenyl tetrazolium bromide) has revealed that the (MgOr/CHs) inhibited the growth of cell lines examined in a dose dependent manner. **Conclusion:** Hence, magnesium orotate inclusion complex may have great potential to be applied for cancer treatment.

KEYWORDS: *Antioxidant, antihypertensive, inclusion complex, radical scavenging, synthesis*

ID 89. Derivation of Quality Improvement Projects through Clinical Pharmacy Intervention Data to Optimize the Provision of Clinical Pharmacy Services in a Tertiary Private Hospital

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Introduction: Healthcare data plays an important role in the innovation and improvement of clinical pharmacy (CP) service. In our setting, interventions performed by clinical pharmacists serve as a unique tool to identify stakeholder needs, assess current performance and identify gaps through quality improvement projects (QIPs). **Objectives:** To describe the utilization of CP intervention data in deriving QIPs to optimize CP services towards patient-centered activities. **Material and Methods:** This retrospective observational study analyzed a total of 17,644 documented CP interventions of a tertiary private hospital, between January 2014 and December 2018. Analyzed interventions focused on three most common categories, namely Adverse Event Prevented (AEP), Medication Reconciliation (MR) and Patient Education (PE). QIPs were derived and implemented following the yearly analysis, including: 1) conducted multiple training on safe drug administration topics to nursing and pharmacy staff; 2) issuance of various in-house references for nursing and pharmacy staff; 3) published several patient education materials; and 4) implementation of numerous MR-related initiatives. **Results:** Following QIPs implementation, AEP interventions showed a decreasing trend from 20% (2014) to 13% (2018), and MR and PE interventions increased from 12% (2014) to 47% (2018) and 14% (2014) to 28% (2017) respectively. **Conclusion:** Systematic data collection and analysis of clinical pharmacists' interventions along with implementation of QIPs have improved processes and minimized the opportunities for error and adverse events. This enabled clinical pharmacists to allocate more time on patient-centered activities, particularly in MR and PE, facilitating a paradigm shift in the institution towards patient-centered health outcomes.

KEYWORDS: *Clinical pharmacy, data, initiatives, patient-centered, quality improvement projects*

ID 90. Intra-peritoneal Antibiotic Utilization among Continuous Ambulatory Peritoneal Dialysis (CAPD) Patients with Peritonitis at a Tertiary Hospital Setting in Malaysia

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Introduction: CAPD patients are commonly associated with peritonitis. However, little is known about the utilization of antibiotic for the treatment of peritonitis in patients using CAPD. **Objectives:** This study aimed to evaluate the patterns of intra-peritoneal antibiotics utilization for the treatment of peritonitis in CAPD patients. **Materials and Methods:** This was a retrospective study conducted at a tertiary hospital setting in Malaysia. Medical records of CAPD patients who were diagnosed with peritonitis and registered with National Kidney Registry during 2013 to 2018 were reviewed. Types of antibiotics used and its dose and duration were recorded and reported using the ATC/DDD system. **Results:** A total of 105 peritonitis episodes were recorded from 72 patients. The most common first line empiric combinations used were ceftazidime/cefazolin (40%, n=42), followed by cefepime/cefazolin (30.5%, n=32) and ceftazidime/cloxacillin (25.7%, n=27). The definite therapy after obtaining the culture and sensitivity report demonstrated that vancomycin was the most prescribed (33.64%, n=36), followed by meropenem (14.95%, n=16) and amikacin (14.02%, n=15). Although ciprofloxacin was the least antibiotic prescribed for CAPD-related peritonitis (1.87%, n=2), the DDD/100patient-days estimates showed that its therapeutic intensity was the highest. **Conclusion:** There were various intra-peritoneal antibiotics used for CAPD-related peritonitis and the most common empirical therapy was the combination of ceftazidime and cefazolin while vancomycin was predominantly used for definite therapy. Future studies to evaluate the clinical outcomes of the antibiotic use are warranted to have a better insight on the efficacy of the peritonitis treatment, hence better quality of patient care.

KEYWORDS: *Antibiotics, continuous ambulatory peritoneal dialysis (CAPD), intra-peritoneal, peritonitis*

ID 92. Osteoporosis Knowledge and Osteoprotective Behavior among Female Patients Attending DXA Clinic: A Cross-sectional Study

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Introduction: Osteoporosis is a serious public health concern and its knowledge is documented to be an important in reducing the prevalence of the disease. **Objectives:** To validate an osteoporosis knowledge

instrument and to determine female patient's knowledge about osteoporosis and its prevention. **Material and Methods:** A cross sectional study design with a convenience sampling method. It was conducted among (202) female patients attending DXA clinic in Mosul city / Iraq from November to February 2018. The assessment was performed using a structured questionnaire including Osteoporosis Knowledge Assessment Tool (OKAT). Bone mineral density (BMD) measurements were carried out by Dual-Energy X-ray Absorptiometry (DXA). **Results:** The questionnaire showed a good and acceptable content and face validity results. The reliability value was 0.881 for the nineteen items in OKAT. The mean age of the participants was 56.18 ± 11.4 years. Around half of the females (49.0%, n =99) had an intermediate score (9 to 13) of knowledge, while 43.6% (n =88) had a low score (< 8). Significant correlation between age and osteoporosis knowledge was found (Spearman's rho = 0.564, P<0.05). Only 41.6% had a normal BMD (considered as low risk of abnormal BMD), where as osteopenia and osteoporosis (high risk of abnormal BMD) were 47.0% and 11.4%, respectively. **Conclusion:** The translated OKAT was reliable and valid instruments for assessing knowledge and health belief toward osteoporosis in female patients. The tools were suitable to recognize the patients requiring bone health-promoting intervention concerning changes of the lifestyle behavior in a clinical setting.

KEYWORDS: Knowledge, osteoporosis, osteoprotective behavior, OKAT

ID 93. Knowledge and Practice of Contraception Use among Females of Child-bearing Age in Mosul, Iraq

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Introduction: For thousands of years, fertility control has been used in different forms. **Objectives:** To evaluate KAP of participants regarding birth control methods with the prevalence of the use of each method. **Material and Methods:** A cross-sectional study design was employed to measure KAP among females. A total of 400 married women between the ages of 18 and 40 years were interviewed by the first author. Face-to-face interviews involved the administration of a translated self-administered questionnaire that was employed to evaluate knowledge, belief, and practice concerning the use of contraception and to collect socio-demographic data. **Results:** A total sample of 388 women of child-bearing age was interviewed. The mean age \pm SD was 29.76 ± 6.67 , while the mean number of offspring was 4.06 ± 2.08 . The IUCD was the most frequently used method followed by OCP, while the safe-period method was the least frequently used. More than 50% of the females obtained their contraceptives from public health centers and/or hospitals. The mean number of known contraception methods was 2.15 ± 1.07 . Safety was the most indicated

criteria for choosing the preferred method. Out of all of the respondents, 86.9% indicated that they experience adverse effects from using contraceptive methods, in which a higher rate was for OCP (31.1%), IUCD (21.3%), or from both methods (18.4%). **Conclusions:** Because contraception and family-planning decision making is almost always the responsibility of both partners, the involvement of men in contraception knowledge issues is important. Females with lower levels of education require continued education and regular communication about the importance of birth control to promote the use of modern contraceptive methods.

KEYWORDS: Birth control, contraception, iraq, knowledge

ID 95. Co-evaporation versus Freeze Drying: Methods to Improve Dissolution Efficiency of Simvastatin Inclusion Complexes with β -Cyclodextrin

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Introduction: Simvastatin, one of the dyslipidemia drugs, has an insoluble property in water causing limited dissolution. Therefore, it is necessary to improve its dissolution on inclusion complexes formation. **Objectives:** This study aimed to characterize and improve the dissolution of simvastatin on inclusion complexes formation using β -cyclodextrin by freeze-drying and co-evaporation method, and to analyze the influence of both methods on simvastatin dissolution. **Materials and Methods:** The inclusion complexes of simvastatin and β -cyclodextrin were designed in 4 different formulas, which were in 1:1M (formula 1) and 1:2M (formula 2) with freeze-drying method, and 1:1M (formula 3) and 1:2M (formula 4) with co-evaporation method, while single simvastatin and single β -cyclodextrin were used as controls. The characteristics of inclusion complexes were analyzed using infrared spectroscopy, x-ray diffraction (XRD), UV-Vis spectrophotometry, and thin-layer chromatography (TLC), while dissolution test was performed using apparatus I. **Results:** The evaluation results showed that inclusion complexes formed on all formulas, which were characterized by a change in spectrum and its intensity in infrared spectroscopy, a change in diffraction pattern and intensity in XRD, decreasing retention factor in TLC, and decreased in UV-Vis spectrophotometry intensity. The dissolution test results showed that dissolution efficiency at 30 minutes in 4 formulas were 58.70%, 74.24%, 58.02%, and 88.66%, respectively. **Conclusion:** The enhancement of simvastatin dissolution using co-evaporation with a ratio of 1:2M was the highest among the other formulas. Therefore, further studies are encouraged to develop and

expand the physicochemical and therapeutic properties to design oral dosage forms.

KEYWORDS: β -Cyclodextrin, co-evaporation, freeze-drying, inclusion complex, simvastatin

ID 96. The Influence of Pharmacist Intervention on Outcomes of Type 2 Diabetes Mellitus: A Multicentre Study

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Introduction: The management of type 2 diabetes mellitus requires extra care not only from health care providers but also from the patients. In the health care system of Malaysia, pharmacists are delivering these DMTAC departments in hospitals. **Objectives:** This study aimed to appraise the effect of pharmacist intervention in the form of DMTAC services on type 2 diabetes mellitus patients in two different hospitals of Malaysia. **Materials and Methods:** The patients were randomly selected and divided in to two groups. Control group contained those 200 patients who were receiving usual treatment from hospitals whereas intervention group contained those 200 patients who were receiving usual treatment from hospitals together with separate counselling sessions with pharmacists from DMTAC departments. The study continued for one year and 4 visits for both groups. **Results:** Paired t-test and one-way ANOVA was carried out by SPSS 24. At the end, intervention group patients revealed a greater reduction in HbA1c level as compared to the control group patients (-0.93% vs. -0.19%; $p < 0.001$). Significant reductions in FBS was also revealed in both groups on each follow-up visits ($p < 0.031, 0.043, 0.012, 0.045$). Statistical significant reduction was also observed in Systolic and Diastolic BP of the patients ($p < 0.019$). Similarly, statistical significant reduction in cholesterol level was also observed in both groups ($p < 0$). **Conclusion:** At the end of the study, intervention group of patients belongs to pharmacist from DMTAC department shows significant improvement in outcomes of diabetes mellitus.

KEYWORDS: Control group, DMTAC department, HbA1c, intervention group, type 2 diabetes mellitus

ID 97. Gel Potential of Red Onion (*Allium cepa* L.) Ethanol Extract as anti fungal Cause Tinea Pedis

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Introduction: Tinea pedis is a dermatophyte infection of the foot, especially between the fingers and soles of the feet. Tinea pedis is caused by a fungal infection of *Trichophyton rubrum*. Red onion is one of the spices that has been widely known by the public and has been used as traditional medicine in the prevention of fungus. **Objectives:** To determine the antifungal activity of gel from ethanol extract of red onion on *Trichophyton rubrum*. **Materials and Methods:** The gel was formulated with various concentration of red onion extract, F1 containing (5%), F2 (7,5%) and F3 (12,5%) extracts. Where the extract of red onion contains allicin which has activities to inhibit fungal growth. Each formula was tested the for its physical characteristics and antifungal activity toward *T. rubrum*. The antifungal activity was determined by the agar-well diffusion method using SDA medium and incubated for 7 days at 28°C. Furthermore, the antifungal activities were assessed by the presence or absence of inhibition zones after the plates were incubated at 28°C for 7 days. **Results:** All of red onion gels exhibited antifungal activity. Maximum inhibition zone in antifungal activity test was shown by F3 (12,5%) was 20,82mm. Therefore, we can use this gel as a natural antifungal in the healing of tinea pedis cause by *T. rubrum*. **Conclusion:** The gel from an extract of red onion showed significant antifungal activity against *T. rubrum*.

KEYWORDS: Gel, red onion, trichophyton rubrum, tinea pedis

ID 98. Potentially Inappropriate Medication in Geriatric Outpatient of Tertiary Hospital in Indonesia

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Introduction: Increased percentage of geriatric population has an impact on more health issues. The older the geriatrics, the more susceptible they are to various physical complaints due to either natural factors or diseases. **Objectives:** To described the prevalence of potentially inappropriate prescriptions in geriatric outpatients. **Materials and Methods:** A retrospective, cross-sectional study was done for three months in the Medical Record Department, in one of tertiary hospitals in Indonesia. The data was analyzed using Beers Criteria 2012 and described as descriptive statistics. **Results:** A total 400 prescriptions were collected in the study during the period of 3 months. The estimated prevalence of potentially inappropriate prescription use in tertiary hospitals in Indonesia reached 24.5%. The most common potentially inappropriate prescriptions were nonsteroidal anti-inflammatory drugs (NSAID) (17 %) and benzodiazepine (12%). **Conclusion:** NSAID was the most prescribed potentially inappropriate agents of 66 events.

KEYWORDS: *Beers criteria 2012, geriatrics, indonesia, potentially inappropriate prescription*

ID 99. Anti-inflammatory and Analgesic Effects of *Trachyspermum ammi* Seed Extract and Its GC-MS Analysis

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Introduction: Since ancient times *Trachyspermum ammi* was utilized for its anti-inflammatory and analgesic effects in traditional medicine system. **Objectives:** Present study aimed to evaluate the anti-inflammatory and analgesic effect and characterization of chemical composition seed extract of *T. ammi* through GC-MS. **Material and Methods:** Seed extracts were prepared through soxhlet extraction using n-hexane, chloroform and methanol as solvents. Gas chromatography-mass spectroscopy (GC-MS) analysis was performed by derivatized sample of *T. ammi* extract. Acute toxicity test performed at dose of 400mg/kg, 800mg/kg, 1600mg/kg and 3200mg/kg. Two different strengths (minimum therapeutic dose 500mg/kg and maximum therapeutic dose 1000mg/kg) were given to Wistar rats to measure anti-inflammatory and analgesic activity. **Results:** Results from analgesic and anti-inflammatory activity demonstrate that in both activities standard drug (tramadol) have more analgesic (percentage of analgesia 26.08%) and regarding anti-inflammatory effect diclofenac sodium (percentage of inhibition of paw edema 29.68%) more effective as compared to test drug. When efficacy of all extracts compared with each other n-hexane extract showed more percentage of inhibition (percentage analgesia 20.69% and percentage inhibition of paw edema 22.21%) at maximum effective dose 1000mg/kg. In order to find out significance difference among groups ANOVA test was used at 95% significant level. A number of different bioactive compounds were identified through GC-MS analysis. **Conclusion:** Results showed that *T. ammi* seed extracts have anti-inflammatory and analgesic activity potentiating in neurotransmission of GABA and repression of receptor of glutamate along with suppression of nitric oxide (NO) pathway. Phenolic compounds present in seeds may responsible for anti-inflammatory activity.

KEYWORDS: Anti-inflammatory, analgesic effect, acute toxicity, *Trachyspermum ammi*

ID 100. Comparison of Tools to Assess Nicotine Dependence from Electronic Cigarette Use

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Introduction: E-cigarette use is increasing both locally and globally, providing the need for a valid and reliable tool to measure nicotine dependence among users. **Objective:** To compare existing tools assessing nicotine dependence from e-cigarette use. **Method:** A literature review was conducted using two databases, Google Scholar and EBSCOhost using keywords: “addiction” or “dependence”, “tools” or “questionnaire” or “method”, “assess” or “measure” or “indicate” or “evaluate”, “e-cigarette” or “vaping” or “electronic cigarette”. Related studies were also searched and the reference lists were also browsed. **Results:** Six tools to assess nicotine dependence from e-cigarette use were identified; E-Fagerström Test for Nicotine Dependence (e-FTND), 19-item E-Nicotine Dependence Syndrome Scale (e-NDSS), 12-item E-Cigarette Dependence Scale (e-CDS), Pennsylvania State Electronic Cigarette Dependence Index (PSECIDI), questionnaire derived from the data from the Population Assessment of Tobacco and Health (PATH) study, and the Patient-Reported Outcomes Measurement Information System (PROMIS-E) Nicotine Dependence Item Bank. Of these, only the PATH and PROMIS-E questionnaires have been psychometrically evaluated. The factor loading of PATH and PROMIS-E is between 0.17 to 0.92 and 0.61 to 0.91, respectively. **Conclusion:** The PROMIS-E shows better psychometric properties than other existing tools to validly measure nicotine dependence from e-cigarette use.

KEYWORDS: *Dependence, electronic cigarette, nicotine, tool*

ID 101. Gas Chromatography-Mass Spectrometry Based Metabolomics to Identify the Alpha Glucosidase Inhibitors from Flesh of Salacca Zalacca Fruits and Their Molecular Docking Studies

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Introduction: Salak fruit (*Salacca zalacca*) is traditionally used and commercialized as an antidiabetic agent. However,

the scientific evidence to proof this usage is quiet lacking. **Objectives:** This research was aimed to evaluate the antidiabetic activity of *S. zalacca* fruit using α -glucosidase enzyme and profiling the identified antidiabetic agents using gas chromatography-mass spectrometry (GC-MS). **Material and Methods:** For metabolomics study, the fruit was extracted by different ratios of ethanol and water (0, 20, 40, 60, 80, 100%, v/v) to get E0 (100% water), E20 (20% ethanol), E40 (40% ethanol), E60 (60% ethanol), E80 (80% ethanol) and E100 (100% ethanol). The α -glucosidase enzyme was used in determining the α -glucosidase inhibitory activity. **Results:** The 60% aqueous ethanolic extract exhibited the highest bioactivity (IC₅₀ 16.90 μ g/mL). Several α -glucosidase inhibitors such as stearic acid, palmitic acid, β -Sitosterol, myo-inositol were identified by GC-MS. The docking results predicted the interactions of all the metabolites identified to be in non-competitive mode involving majorly hydrophobic interactions with the protein residues. Some of the residues involved are PRO456, AGR467, LYS406 HID295, ASN259 LEU313, LYS125 H-bond HIE315, ARG315, PHE303. **Conclusion:** The *in vitro* assay strongly suggests that E60 extract from *S. zalacca* fruit is having potential antidiabetic activity. Addition of extra hydrophobic groups on palmitic acid and β -sitosterol would increase the inhibitory activity.

KEYWORDS: *α -glucosidase enzyme, fruit, GC-MS, metabolomics, salacca zalacca*

ID 102. Nurses' Knowledge of Pharmaceutical Care with Their Perception and Expectation of the Potential Roles of Pharmacist in Private Outpatient Haemodialysis Centres

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Introduction: Pharmaceutical care issues are common among ambulatory haemodialysis patients. Provision of pharmaceutical care by pharmacist has benefitted this population but it is yet to be implemented in private haemodialysis centre. **Objectives:** To develop a valid and reliable questionnaire, which later on is used to evaluate nurses' knowledge of pharmaceutical care aspect of patient care; and to assess nurses' perception and expectation of the potential roles of pharmacist in private haemodialysis centre. **Materials and Methods:** A set of questionnaire was developed after extensive literature review of related studies. Content validity index was used to examine the validity of questionnaire. Cronbach's alpha was computed for reliability study. A cross-sectional study was conducted among nurses in private haemodialysis centres in Kuantan, Pahang using the questionnaire.

Data was entered into SPSS IBM version 21, where descriptive and inferential analyses were conducted. **Results:** Scale-level content validity index calculated was 0.91. Cronbach's alpha generated reached 0.70. A total of 63 nurses participated in this study. Majority of them (98.4%) acknowledged identification of pharmaceutical care issues as one of pharmaceutical care objectives. Majority of them (84.1%) agreed that pharmacist is reliable as the source for general and clinical drug information. About 50.8% of them expected pharmacist to resolve any pharmaceutical care issues encountered. **Conclusion:** Over half of those surveyed demonstrated adequate pharmaceutical care knowledge and had positive perception and high expectation on the potential roles of pharmacist. The present work may shed some light on the potential implementation of pharmaceutical care services and interprofessional collaboration between nurses and pharmacists in private haemodialysis centre.

KEYWORDS: *Expectation, knowledge, nurse, perception, pharmaceutical care, pharmacist's roles, private haemodialysis centre*

ID 103. The Study of Drug Related Problems in Antibiotics Utilisation in Pediatric Hospitalised Patient in Universitas Sumatera Utara Hospital

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Introduction: Drug Related Problems (DRPs) are problems that frequently occurs in health care. Errors in pediatric care are very common because of several reasons such as *off label* drug utilisation, dosage of drug, and pharmacokinetic problem related to age and body weight of the patient. **Objectives:** The purpose of this study was to determine the incidence of DRPs in antibiotics utilisation in pediatric hospitalised patient in Universitas Sumatera Utara hospital. **Materials and Methods:** The data was collected from medical records on pediatric hospitalized patient during January-December 2018 and this descriptive retrospective study was conducted in May-June 2019. **Results:** The study showed, there were 575 medical records and 135 (23.47%) medical records who met the inclusion criteria and male patients 84 (62.22%) was higher than female. 5-11 years old patient was the majority age of the patients 55 (40.74%), and the maximum length of stay of patients was <5 days 86 (63.70%). There were 73 occurrences of drug related problems in 37 patients with the following details; low dose 46 events (63.01%), overdose 22 events (30.14%), adverse drug reaction 2 events (2.74%), and drug interaction 3 events (4.11%). The most experienced antibiotic DRPs was Cefotaxime 14 (19.18%) and the most diagnosed of the patients was appendicitis 14 (10.37%). **Conclusion:** It can be concluded that there were DRPs in antibiotics utilisation in pediatric hospitalised patient in Universitas Sumatera Utara hospital.

KEYWORDS: Antibiotic, drug related problems, medical record, pediatric hospitalized patient

ID 104. Risk Assessment for Screening of Diabetes Mellitus among First Year Pharmacy Students

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Introduction: The prevalence of Type 2 diabetes among young-age group rose 30 percent nowadays although Type 2 diabetes used to be called adult-onset. **Objective:** This cross-sectional study aimed to assess T2DM risk among first year pharmacy students of IIUM. **Materials and Methods:** Finnish Diabetes Risk Assessment was used to study the diabetes risk factors together with laboratory test of random blood glucose (RBG). The randomized stratified cluster sample of first year pharmacy students (n=106) was recruited in this practical-based survey. **Results:** Among 39 male and 68 female, 62.2% (n= 66) of the sample population both gender were found having slightly elevated risk for T2DM, 10.3% (n=11) were moderately risk and only 6.6% (n=7) were at high risk. The diabetes risk ranged from 3 to 18 with the mean score of 8.93 ± 2.9 . Moreover, positive correlation was found between RBG and the total risk scores which emphasized that exposure with high blood sugar level lead to a high risk of diabetes. Likewise, students with family history of diabetes have high tendency to develop T2DM that was highlighted in this study. Based on the BMI, 79.4% (n=85) of total students have desirable weight while the remaining 15.9% (n= 17) and 4.7% (n= 5) was found to be overweight and obese respectively. The mean RBG of all students was 5.43 mmol/l and RBG value of 16% (n=17) of total students were observed in approaching to prediabetes value. **Conclusion:** Most of students have elevated risk factor of diabetes; therefore, early intervention should be initiated to prevent the prevalence of T2DM.

KEYWORDS: Diabetes risk score, practical-based survey, type 2 diabetes mellitus

ID 105. Time to Treatment Initiation and Retrospective Analysis of Antiretroviral Therapy Outcomes among HIV-Positive Methadone Maintenance Therapy Clients in Primary Healthcare Centres, Kuantan, Pahang

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Introduction: Methadone Maintenance Therapy (MMT) program improves access to antiretroviral therapy (ART) among people who inject drugs (PWID) with HIV positive status. However, the time to treatment initiation (TTI) and outcomes of ART intervention in this population has scarcely been analysed. **Objectives:** This study aimed to analyse the TTI and outcomes of ART among MMT clients in primary health care centers in Kuantan Pahang. **Materials and Methods:** This is a retrospective evaluation of MMT patients' profiles from the year 2006 to 2019. The TTI was calculated from the day of diagnosis to ART treatment initiation. The trends of CD4 counts and viral loads were descriptively evaluated. Cox proportional hazard model was used to analyse the survival and treatment retention rate. **Results:** There was a total of 67 HIV positive MMT clients from six primary healthcare centres with 37 clients were started on ART. The mean TTI of ART was 27 months. The clients who were given ART had a median CD4 count of 119 cells/mm³ at baseline. After 6 months, the CD4 count increased to a median of 219 cells/mm³. There were only two patients (5.4%) in ART group with unsuppressed viral load. The initiation of ART had reduced the risk of death by 72.8% (hazard ratio = 0.27, p=0.024) and they are 13.1 times more likely to retain in treatment (p<0.01). **Conclusion:** The TTI of ART was delayed in this population. MMT clients who were given ART have better CD4 outcomes, improves viral loads, helped reduced death risk and showed higher retention rate in MMT program.

KEYWORDS: ART treatment outcomes, HIV positive, methadone maintenance therapy, time to treatment initiation (TTI)

ID 106. Evaluation of Salbutamol Prescribing Practice for Paediatric Outpatients in a Non Specialised Hospital

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Introduction: Salbutamol is extensively prescribed for respiratory disease. However, salbutamol prescribing practice among paediatric population is still understudied. Oral salbutamol usage in infants remains controversial. **Objectives:** This study aimed to evaluate salbutamol prescribing practice for paediatric outpatients in Hospital Tanjung Karang (HTK). **Materials and Methods:** In this cross-sectional study, all paediatric prescriptions with salbutamol received at Outpatient Pharmacy HTK from December 2018 to February 2019 were tracked from Pharmacy Information System (PhIS). 280 samples fulfilling criteria were obtained via systematic random sampling. Data on patient demographics, diagnoses and salbutamol formulations were collected retrospectively using data collection form and analysed with SPSS Statistics. Descriptive statistics and Chi-Square tests were employed. **Results:** Distribution of infant (1 month-2 years old) was the greatest, followed by young child (2-6 years old) and child (6-12 years old). 68.6% salbutamol was prescribed for upper respiratory tract infection (URTI) while 87.9% salbutamol was given as oral formulation. There were significant associations between paediatric age groups, diagnoses and salbutamol dosage forms ($p < 0.001$). Among all the study samples, 82.5% of salbutamol prescribing was found inappropriate. **Conclusion:** Despite the popularity of oral salbutamol, some salbutamol prescriptions are unnecessary. Further assessments and PhIS monitoring are required to ensure quality, safe and effective use of salbutamol among paediatric population.

KEYWORDS: Salbutamol, prescribing practice, paediatrics

ID 107. Docking Study of Anti HIV-1 Activity of Secondary Metabolites from Zingiberaceae Plants

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Introduction: Human immunodeficiency virus type-1 (HIV-1) that causes acquired immunodeficiency syndrome (AIDS) have become world-wide health problem today. There are about 30 anti HIV-1 drugs have been applied for the treatment of AIDS therapy. However, the searching for the effective anti HIV-1 agents with the less side effect and high inhibition potency is still in demand. **Objectives:** To identify the potential compound from *Zingiberaceae* plants that might be active as anti HIV by virtual screening methods. **Materials and Methods:** Molecular docking simulation was performed by using AutoDock 4.2 on Linux operation system. Docking protocol was validated by employing root mean square deviation (RMSD) on cross docking method. The reported metabolites from *Zingiberaceae* plants was docked on HIV-1 protease, integrase and reverse transcriptase protein enzymes. **Results:** The docking result showed that the genera of *Zingiber*, *Etingera* and *Alpinia* have potential metabolites that inhibit HIV protease, integrase and reverse transcriptase enzymes

by possessing lower docking energy than native ligand of amprenavir, raltegravir and nevirapin, respectively. Among the metabolites, noralpendenoside B and alpendenoside A from *Alpinia densespicata* inhibited protease enzymes with the lowest docking energy of -18.02 and -17.90 kcal/mol, respectively. Meanwhile, zingiberanol from *Zingiber officinale* showed the lowest docking energy on integrase protein and pahangensin A from *Alpinia pahangensis* Ridley exhibited the lowest docking energy on reverse transcriptase enzyme with docking energy of -11.69 and -13.76 kcal/mol, respectively. **Conclusion:** This docking molecular study has identified the possible potential compounds from *Zingiberaceae* plants that might be used as anti HIV-1. So, this study suggested for further isolation and purification of the predicted compounds.

KEYWORDS: Docking, HIV, integrase, protease, reverse transcriptase, zingiberaceae

ID 108. Determination of Vitamin C (Ascorbic Acid) Content From Orange Fruits (*Citrus reticulata* Blanco) Based on Temperature and Storage Time Using UV Visible Spectrophotometer

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Introduction: West Sumatera Province in Indonesia produces three types of fruit. They are orange, mangosteen and banana every year. Orange fruit is one of favorite fruit because it is rich of Vitamin C, good taste and affordable prices. There are many ways of storing the orange fruit. Some people put it in refrigerator and others stored at room temperature. Then, the other people may eat orange fruit directly or store for several days. The different of those treatments may effect the Vitamin C content. Based on these two reasons, the research about Vitamin C content based on temperature and storage time had been conducted.

Objectives: The purpose of this research was to determine the effect of temperature (refrigeration temperature/15°C and room temperature/30°C) and storage time (1, 3 and 7 days) toward Vitamin C content in orange fruit. **Materials and Methods:** The orange fruit was squeezed, filtered and diluted for 100 times. All prepared solution of orange fruit had been measured with Spectrophotometer UV Visible at maximum absorption wavelength 264 nm. **Results:** The results obtained there was a decrease of Vitamin C content in orange fruit based on different temperature and storage time. The orange fruit was stored in refrigeration temperature has decreased more than orange fruit that stored at room temperature. Then, orange fruit which storage in 7 days decreased more than orange fruit that stored for 3 days. **Conclusion:** In conclusion, the different of temperature and storage time have effect on the Vitamin C content.

KEYWORDS: *Citrus reticulata* blanco, orange fruit, storage time, temperature, vitamin C

ID 109. Self-medication Practice among Final Year Students of a Governmental University: A Comparison between Medical and Non-medical Students

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Introduction: Self-medication is defined as any usage of the medications without having any proper diagnosis, consultation and prescription from a healthcare practitioner. **Objective:** This study aimed to determine the prevalence and pattern of self-medication among undergraduate final year students, and to compare the prevalence and pattern of self-medication between medical and non-medical final year students. **Method:** A cross-sectional study was conducted among final year students (4 medical programmes and 1 non-medical programme) from International Islamic University Malaysia, Kuantan Campus. A pre-validated questionnaire was distributed to 300 students in October 2016. Chi-square test was used to compare between medical and non-medical students. **Results:** 225 medical and 63 non-medical students (science programme students) answered the questionnaire. The mean age was 23.23 ± 0.733 years. More than half of the participants (61%) practiced self-medication with no significant difference between medical and non-medical students (60.9% Vs 61.9%; $P = 0.884$). The most common reasons of self-medication in both groups was “a previous experience with similar problem”; with fever being the most self-treated condition followed by flu/cold. The majority of both groups (89.9%; 92.1%) acknowledged the necessity of consulting a certified medical practitioner before taking any medications. However, only 69.3% of the non-medical students believed that self-medication could be harmful compared with 89.3% of the medical students ($P < 0.001$). **Conclusion:** The prevalence of self-medication practice among medical and non-medical students was high and there was also a lack of awareness about its harm among non-medical students.

KEYWORDS: *Medical students, non-medical students, self-medication*

ID 110. The Potential Effect of Ketapang (*Terminalia cattapa*) Leaf Extract as Co-chemotherapy Agent of Doxorubicin on Breast (T47D) and Cervix (HeLa) Cancer Cell Lines

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Introduction: Doxorubicin is one of the chemotherapy agents frequently used for curing breast and cervix cancer. Unfortunately, it has a severe negative effect; it is necessary to have co-chemotherapy to reduce the adverse reaction. To improve the effectivity of doxorubicin, the development was done by combining it with the ethanolic extracts of the ketapang leaves. **Objectives:** The aim of this study was to determine the sensitivity of doxorubicin as a cytotoxic agent against T47D and HeLa cancer cells and their combination with ethanolic extracts of the ketapang leaves (EKL). **Materials and Methods:** The cytotoxic test was conducted using MTT assay with the concentration series of doxorubicin (0.625–40 nM for T47D and 0.5–6 µM for HeLa) and EKL (50–1000 µg/mL). The combination between doxorubicin and EKL was used for combination treatment on T47D and HeLa cells. The observation of proliferation employed a doubling time method. **Results:** The IC₅₀ value of doxorubicin and EKL inhibited T47D is 158 nM and 30 µg/mL; and inhibited HeLa cell growth with IC₅₀ 3.4 µM and 640 µg/mL, respectively. The combination therapy of doxorubicin and EKL on T47D cell line resulted in a synergistic effect with a combination index (CI) 0.62; while on HeLa, combination of doxorubicin and EKL have cytotoxic effect with dose dependent manner. The treatment doxorubicin and EKL on the proliferation of T47D and HeLa cancer cell shown that EKL increase of the inhibitory effect of doxorubicin. **Conclusion:** EKL has more potential to be developed as co-chemotherapy on doxorubicin therapy in T47D than on the HeLa cell line.

KEYWORDS: *Doxorubicin, heLa, terminalia cattapa, T47D*

ID 113. Comparison of Sensitivity between Cocaine and Methamphetamine towards Opioid-Based Treatment in Morphine-Dependent Mice

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Introduction: The role of mu-opioid receptor in cocaine dependence is lucid; through its binding at the GABAergic interneurons in ventral tegmental area. Whereas, the involvement of opioid receptor system in methamphetamine dependence is still unclear. It is expected that cocaine users will respond to opioid-based treatment better than methamphetamine users

who uses opioid in concurrent. **Objectives:** This study aimed to investigate any increasing response towards opioid-based treatment in morphine-dependent mice that uses higher dose of methamphetamine, and to compare it with morphine/cocaine-poly-drug-dependent mice. **Materials and Methods:** The morphine-dependent mice were made dependent at two different doses of methamphetamine (1.0 mg/kg or 5.0 mg/kg) and 5 mg/kg cocaine in order to establish opioid/psychostimulant (poly-drug) dependence in conditioned place preference model. During relapse phase, all groups were pre-treated with 0.3 mg/kg buprenorphine/1.0 mg/kg naltrexone (a mixed partial nociceptin opioid receptor agonist and mu/kappa-opioid receptor antagonists). The drug-seeking behaviour was then calculated and compared to their own baseline. Student's *t*-test was used to analyse all results where $p < 0.05$ is considered significant. **Results:** The results showed that buprenorphine/naltrexone combination treatment at both doses successfully attenuated relapse in morphine-dependent mice that concurrently used methamphetamine. A more prominent response was observed when a higher dose of methamphetamine was used. However, relapse happened in morphine/cocaine-dependent group. **Conclusion:** The finding suggests that the opioid receptor system is indeed involved in methamphetamine dependence. The failure of buprenorphine/naltrexone to treat morphine/cocaine dependence require further investigation since previous studies reported that this treatment was effective in separate morphine- and cocaine-dependence models.

KEYWORDS: Cocaine, methamphetamine, opioid

ID 114. Validation of Real-Time Polymerase Chain Reaction (Real-Time PCR) Methods for Pig Identification Using Butter and Corned Beef as a Sample

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Introduction: Muslims are obliged to consume halal food. Pork is one of the requirements of halal food, so it is very important to develop methods for identifying pigs in foods. Real-time PCR is one of the methods that has been developed to identify pork in food. However, validation using primers for pig detection (MacroGen®) has never been done. **Objectives:** This research was conducted to develop a real-time PCR method that meets the validation parameters and to identify pigs in food samples in the form of butter and corned beef using primers for pig detection (MacroGen®). **Materials and Methods:** This study began with a collection of 3 samples of butter and corned beef; pork meat as a positive control; chicken meat and beef meat as negative controls. The DNA of the samples and meat were then isolated,

followed by qualitative and quantitative DNA tests using spectrophotometric methods. The validation method was carried out with 3 parameters, sensitivity test, robustness test, and false negative test. **Results:** The results showed that the limit of detection of pig DNA in butter was 0.2% while for corned beef was 0.1%. The robustness testing showed that annealing temperature of $\pm 1^\circ\text{C}$ and volume $\pm 1\ \mu\text{L}$ did not significantly affect the results of qualitative DNA testing. The false negative value in this study was 0%. **Conclusion:** The real-time PCR method in this experiment meets the validation parameters, meanwhile for the sample identification there were 2 samples that were detected containing pork, M3 (butter) and S1 (corned beef).

KEYWORDS: Real-time PCR, pig identification, validation

ID 115. Prescribing Trend and Drug Cost Analysis of Oral Hypoglycemic Agents Using Drug Utilisation Review

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Introduction: Drug utilization of oral hypoglycemic agents (OHAs) in a private healthcare setting is useful to examine the prescribing pattern of OHAs, especially the newer fixed dose combination (FDC) products. **Objectives:** This study was aimed to evaluate the prescribing pattern of OHAs indicated for Type 2 diabetes mellitus (T2DM), to determine the costs of OHAs prescribed and total cost per prescription in the treatment of T2DM in an outpatient department of a private hospital located in central Malaysia. **Method:** Retrospective review of electronic medical record (EMR) study design was adopted. Patient's demographic characteristics, medications prescribed, prescribers' details and cost per prescription were documented. Defined daily dose (DDD) of OHAs and drug cost were calculated. Research ethics protocol was approved and no personal data was collected. **Results:** Out of the 396 EMR screened, 135 fulfilled the inclusion criteria and subsequently were analysed. In term of demography, mean age of the sample was 51 years old with 59% were male and ethnicity composition of 71% Malay and 19% Chinese. Metformin and "metformin+dipeptidyl peptidase-4 inhibitor" (DPP-4i) were the most commonly prescribed

single-drug and FDC OHA, respectively. Average cost of OHAs and total cost per prescription was less than USD 68 and USD 185, respectively. Meanwhile, FDC covered 28.91% of incidences of prescriptions, but 44.6% of cost and SGTL-2i covered 9% incidences of prescriptions and 16.29% of cost. **Conclusion:** Prescribing pattern of OHA was appropriate based on patient's T2DM diagnosis, however, dosage given were not in accordance with WHO DDD.

KEYWORDS: *Defined daily dose, drug utilization review, diabetes mellitus, oral hypoglycemic agents, prescribing pattern*

ID 116. Development of Verapamil Hydrochloride Cold Cream Using Virgin Coconut Oil

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Introduction: Verapamil hydrochloride (VH) is a calcium channel blocker drug that is widely used to treat hypertension. VH undergoes first pass metabolism which causes its active metabolites is only 10–23%. Development VH in a transdermal preparation is expected to solve this problem. **Objectives:** This study aims to determine the effect of virgin coconut oil (VCO) as a base of the VH cold cream preparation and a penetration enhancer through membrane. **Materials and Methods:** The various concentration of VCO (0%; 10%, 20% and 40%) was added to VH cold cream. The in vitro test for penetration of the VH cold cream was conducted using a vertical diffusion cell with PBS pH 7.4 as a medium receptor. The transport test was carried out for 8 hours to obtain flux, transport efficiency, and lag time. **Results:** The study resulted that flux at each concentration (0%; 10%, 20% and 40%) were 0.374; 0.424; 0.518; and 0.581 mg-1 hours⁻¹ cm⁻² respectively. The highest transport efficiency was resulted from formula with 40% of VCO. The lag time of all formulas was in the range 0.91 to 1.28 hours. **Conclusion:** From the results obtained it can be concluded that VCO is a potential base in cold cream preparation to increase the permeation of VH into the skin and the best performance of the VCO in the cold cream is at a concentration of 40%.

KEYWORDS: *Cold cream, transdermal, VCO, verapamil HCl*

ID 117. Drug Utilisation Review of Fluoroquinolones in a Private Hospital in Malaysia

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Introduction: Fluoroquinolones are indicated for the treatment of a number of infections due to their broad-spectrum activity. **Objectives:** We aimed to describe the types and characteristics of fluoroquinolones prescribed, to examine the pattern of fluoroquinolones used and to calculate and compare the Defined Daily Doses (DDD) for each fluoroquinolones with the WHO guidelines. **Materials and Methods:** The full prescription record of patients prescribed with fluoroquinolones was reviewed and the data which met the inclusion and exclusion criteria were recorded. In this study, the data were recorded as the DDD per 1000 inhabitants per day. Data from the patient's prescription record and demographic profile were assessed using descriptive statistics. **Results:** Out of 200 screened patients' prescription, 51% were males. Patient in the age group of >60 years old was 30.5%; followed by age group 40–49 years, 18.5%. Ciprofloxacin 250mg (Ciprobay 250mg) was the most widely prescribed fluoroquinolone, accounting for 31% of the prescriptions. This was followed by Levofloxacin 500mg (Cravit 500mg) 25% and Moxifloxacin 400mg (Avelox 400mg) 18.5%. Ofloxacin (Tarivid 100mg) was only 4%. In term of calculation based on DDD, the four most utilized fluoroquinolones were Levofloxacin 500mg (0.049 DID) followed by Moxifloxacin (0.03 DID), Ciprofloxacin 500mg (0.028 DID), and Ciprofloxacin 250mg (0.024 DID). The least antibiotics utilized are Ofloxacin 100mg (0.0069 DID). **Conclusion:** The total fluoroquinolones antibiotics used for the outpatient department in the study hospital are 0.1409 DID. Our study reported that the DDD, for all the class of fluoroquinolones complied with the recommended WHO DDD.

KEYWORDS: *Antimicrobial, ciprofloxacin, defined daily dose, levofloxacin, pharmacoepidemiology, prescribing pattern*

ID 118. Provision of Standardised All-in-One Parenteral Nutrition for Very Preterm Neonates: Evaluation at Room and Cold Temperatures

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Introduction: The AIO-parenteral nutrition is essential for patient with limited venous access e.g. premature infants. Until now there is still conflicting data related to the stability of all in-one parenteral nutrition. **Objectives:** The aim of this study is to examine the

physical stability and sterility of AIO-PN during being stored at room and cold temperature. **Materials and Methods:** AIO-PN contains dextrose, amino acid, lipid, sodium chloride, magnesium sulphate, potassium chloride, calcium gluconate and also vitamin. Formulation of AIO-PN is prepared based on guidance of nutrition for preterm baby with weight of 1000g and with three days of age. The formulation of AIO-PN then is stored at room temperature ($25.43\text{ }^{\circ}\text{C} \pm 0.54$) and cold temperature ($6,2\text{ }^{\circ}\text{C} \pm 2.04$). **Results:** Based on the experiments, all formulas confidently meet the sterile criteria, where there is no microbial growth in the formula within 7 days. During 7 days, the droplet size of all formulas were under the range ($<500\text{nm}$) with a good range of pH. However, during being stored under room temperature, AIO-PN showed the creaming starting at day 3 and the discoloration starting at day 5. We found that there is no such physical changes of the formula within 7 days under cold temperature. **Conclusion:** This research confirmed that AIO-PN being stored at room temperature cannot be used starting at the day 3, but the formulation storage under cold temperature remains accepted within 7 days.

KEYWORDS: *All-in-one parenteral nutrition (AIO-PN), preterm baby, physical stability, sterility*

ID 119. Model Validation of Breast Cancer Induced to Bone in Rat Model Using $^{99\text{m}}\text{Tc}$ -MDP

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Introduction: Metastasis is a complex process by which tumour cells escape from the primary site and form a new lesion in other organs. It is a common phenomenon of malignant disease where bone is the frequent metastatic site. Bone scan using $^{99\text{m}}\text{Tc}$ -Technetium-Methylenediphosphate ($^{99\text{m}}\text{Tc}$ -MDP) is used to diagnose bone pathologies such as bone metastases and occult fracture. $^{99\text{m}}\text{Tc}$ -MDP specifically bind to the surface of the bone and the area of new bone formation are hypothesized to have a high uptake. The uptake is bone specific however nonosseous structure uptake is an indicator of tissue abnormalities. **Objective:** This study is aimed to validate $^{99\text{m}}\text{Tc}$ -MDP in breast cancer induced to bone rat model and to prove the calcium presence in the progression of metastasis. **Materials and Methods:** The rats were divided into two groups which include Sham (normal) and cancer induced group. For the cancer induced group, the left femur was induced with MDA-MB-231, breast cancer cell line. After 21 days, all the rats were subjected to SPECT-CT scan with 1 mCi $^{99\text{m}}\text{Tc}$ -MDP injected through tail vein. **Results:** The model was validated and cancer induced rats were shown to have kidney uptake of $^{99\text{m}}\text{Tc}$ -MDP.

Histology shown presence of calcium crystals in the kidney. **Conclusion:** Our finding suggested that the kidney uptake of $^{99\text{m}}\text{Tc}$ -MDP is due to the calcium crystal presence in the kidney. The calcium crystal deposit in kidney is termed as nephrocalcinosis. Calcium presence in the kidney was proposed as an indicator of cancer progression. However, further study need to be done to confirm this mechanism.

KEYWORDS: *$^{99\text{m}}\text{Tc}$ -MDP, metastasis, SPECT-CT*

ID 120. Acute Toxicity Effect of Andrographolide Self-Nanoemulsifying Drug Delivery System (SNEDDS) Formulation

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Introduction: Andrographolide is an active compound of well-known medicinal plant *Andrographis paniculata*. It has been widely published for various activities. Andrographolide is difficult to develop into dosage form due to its poor solubility and bioavailability. This problem could be solved by using Self-Nanoemulsifying Drug Delivery System (SNEDDS) for its formulation. However, this type of formulation will increase its bioavailability resulting in potential toxicity as the large amount of drug is absorbed. **Objectives:** This study is aimed to evaluate the acute potential toxicity using OECD test: 401 methods. **Materials and Methods:** Thirty male Wistar rats were divided into 5 groups with 2 groups of control and 3 groups of various concentration of andrographolide SNEDDS formulation (500, 700, and 900mg/kg BW respectively). Intensive observation of toxicity symptom was performed during first 30 minutes followed by periodic observation during 24 hours for 14 days. Post termination on the days 15th, the histopathological examination of liver and kidney were conducted to confirm the toxicity symptoms. **Results:** The result showed that all groups presented similar toxicological symptom such as salivation, lethargy, and cornea reflex. However, based on histopathological examination, there were abnormalities but still in an early stage. The toxicological symptom that emerged seems related to the SNEDDS formulation with lipophilic properties. Furthermore, according to Thompson and Weil formula, the level LD50 was 832.6452 mg/kg BW (po). **Conclusion:** This finding suggested that the andrographolide SNEDDS formulation was slightly toxic in male Wistar rats per oral.

KEYWORDS: *Andrographolide, SNEDDS, toxicity*

ID 121. Utilization Pattern of Lipid Modifying Agents in an Outpatient Pharmacy Department of a Private Hospital in Malaysia

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Introduction: Lipid-modifying drugs have been used to treat dyslipidemia as well as for the primary and secondary prevention of CVDs and stroke. **Objective:** This study aims to describe the drug utilization pattern of lipid-modifying drugs in a private hospital. **Method:** A retrospective study was carried out in outpatient of the selected hospital. Patients were selected based on inclusion and exclusion criteria by using convenience sampling. Data were collected through KCIS by retrieving patients' registration number. Defined daily dose (DDD) was calculated and compared to World Health Organization DDD. Medicine prices were also analysed. **Results:** A total of 180 patients' record were analysed, 70% of them were male; 40.6% of the patients were from the age range of 50 to 59 years old; ethnicity breakdown was Malay (69.4%), Indian (18.3%) and Chinese (12.2%). Among all lipid-modifying drugs, utilization of statins was the highest as statins are the preferred line in the treatment of dyslipidemia. Innovator brands were also more preferred where most of the lipid-modifying drugs using in the selected hospital are innovator brand drugs. In terms of cost, lipid-modifying drugs contributes to about 27% of the total cost of prescription in average. The obtained result of utilization of all lipid-modifying drugs in the selected hospital is lower as compared to WHO DDD. Besides, as compared to combination therapy, monotherapy with atorvastatin is generally preferred in the selected hospital. **Conclusion:** The utilization of atorvastatin was also found to be the highest in the OPD of the selected hospital.

KEYWORDS: Cardiovascular diseases, defined daily dose, pharmacoepidemiology, prescribing pattern, statin

ID 122. Development of Nanoemulsion-based Hydrogel Containing Andrographolide: Physical Properties and Stability Evaluation

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Introduction: Andrographolide is a compound that exhibits various pharmacological activities which can be applied topically or orally. Nanoemulsion can improve drug solubility and stability but has limitation for topical application. Incorporation of nanoemulsion into hydrogel can increase the viscosity of the system which can enhance the contact time of the drug with the skin. **Objective:** To prepare and optimize andrographolide nanoemulsion-based hydrogel for topical application. **Materials and Methods:** Andrographolide nanoemulsion was prepared using Capryol 90 as the oil, Kolliphor RH 40 as the surfactant, and propylene glycol as the co-surfactant. Droplet size of the nanoemulsions was evaluated using particle size analyzer. Fourteen formulations of nanoemulsion-based hydrogel were prepared by incorporating nanoemulsion into hydrogel base (1:1). Carbopol was employed as the gelling agent while other excipients including propylene glycol, oleic acid, triethanolamine, methyl paraben, and propyl paraben were also added to produce hydrogel base. Nanoemulsion-based hydrogel were evaluated for its viscosity, pH, and physical appearance (after 8 weeks storage). Design Expert software was employed to analyze and obtain the optimum formulation. **Results:** The result revealed that hydrogel containing 76.1% of carbopol, 1% of triethanolamine, and 22.9% of propylene glycol was selected as optimum formulation which shows acceptable viscosity, pH, and physical appearance. **Conclusion:** This study suggested that andrographolide can be successfully formulated into an acceptable nanoemulsion-based hydrogel. However, further investigations are needed to develop andrographolide nanoemulsion-based hydrogel into a promising topical delivery.

KEYWORDS: Andrographolide, hydrogel, nanoemulsion

ID 123. An Application of Box Behnken Design to Optimize Biosynthesis of Silver Nanoparticles Mediated by Ethanolic Extract of Clitoria Ternatea Petal Flower

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Introduction: Synthesis of silver nanoparticles (AgNPs) can be achieved by reduction silver nitrate. Metabolites from plant can be utilized as reductor to facilitate the synthesis of AgNPs. Anthocyanin is one of the metabolites which is reported as bioreductor of synthesis AgNPs. *Clitoria ternatea* plant extract has been also reported as bioreductor of synthesis AgNPs. **Objectives:** This present work describes the optimization of biosynthesis

of AgNPs mediated by ethanolic extract of *Clitoria ternatea* petal flower using Box Behnken design. **Material and Methods:** The experimental design consists of the concentration of ethanolic extract of *Clitoria ternatea* petal flower (X_1 , %), time of sonication (X_2 , minute) and pulser rate of sonication (X_3 , %) as independent variables while particles size (Y_1 , nm) and polydispersity index (PI) (Y_2 , none) as dependent variables or response variables. Experimental data (X, Y) were analyzed with ANOVA to produce polynomial regression model of responses. **Results:** Significant models of 2 responses ($p < 0.05$) were resulted, following reduced quadratic and reduced linear model for particles size and polydispersity index responses, respectively. The optimized formulation of biosynthesis also resulted a nanosilver with good characteristic (particles size of 73,56 nm and PI value of 0.355). **Conclusion:** Box Behnken design can be employed to optimize biosynthesis of nanosilver mediated by ethanolic extract of *Clitoria ternatea* petal flower.

KEYWORDS: Box behnken, *clitoria ternatea* petal flower, silver nanoparticles (AgNPs)

ID 124. Drug Utilization Review of Antihypertensive Agents at of A Private Hospital in Negeri Sembilan, Malaysia

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Introduction: Drug utilization of antihypertensive agents in a private healthcare setting is useful to examine the prescribing pattern. **Objectives:** we aimed to describe the drug utilization pattern of antihypertensive agents in the outpatient setting of a private hospital and to determine the defined daily dose (DDD) in comparison to World Health Organization (WHO) DDD. **Materials and Methods:** A retrospective study was carried out in outpatient of the selected hospital located at Negeri Sembilan, Malaysia. Patients aged more than 18 years old diagnosed with hypertension were included. Prescriptions from inpatient pharmacy department and other hospitals were excluded. Data were collected through electronic medical record by retrieving patients' registration number. DDD was calculated and compared to WHO DDD. Medicine prices

were also analysed. **Results:** A total of 200 patients' record were analysed, mean age of sample was 55.7 years old (SD=10.98); male patient (64%). The ranking of the drug in terms of cost per year from highest to lowest are as follow: calcium channel blocker (CCB) > angiotensin receptor blocker (ARB) > beta blocker > centrally acting drug > alpha blocker > angiotensin converting enzyme inhibitor (ACEI) > diuretics. The highest drugs utilised in this private hospital were CCB followed by beta blocker and angiotensin receptor blocker. Monotherapy has been used widely compared to the combination therapy because combination therapy or concomitant drugs only needed for uncontrolled or Stage II hypertension. **Conclusion:** The lowest drug used as monotherapy was Alpha Blocker; the lowest drugs used as combination therapy was ACEI combined with diuretics.

KEYWORDS: Cardiovascular, pharmacoepidemiology, telmisartan

ID 126. The Pattern of Aminoglycoside, Meropenem and Vancomycin Prescription in Inpatient at a Regional Public Hospital in Yogyakarta, Indonesia

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Introduction: Aminoglycosides are a class of antibiotics used mainly in the treatment of bacterial with mechanism of action inhibiting protein synthesis inside bacteria. Meropenem and vancomycin have the same mechanism of action that inhibiting cell wall bacteria activity. Antibiotic resistance will occur if antibiotic use is not following the guidelines. Therefore, this study will find out how aminoglycosides, meropenem and vancomycin are prescribed in regional public hospital. **Objectives:** The aim of this study was to know how aminoglycoside, meropenem and vancomycin were used for diagnosis, as well as their dosage and duration of administration during the year 2017. **Materials and Methods:** This research is included in descriptive research with a cross-sectional application. The study was conducted in order to see more broadly how profiles using aminoglycoside classes, meropenem, and vancomycin were administered to patients. Data collection was performed retrospectively using patient medical record data. Data provided include diagnosis, doses, and duration of administration. **Results:** The results of the study showed that total patients who received aminoglycoside: meropenem: vancomycin antibiotics in 2017 who had met the criteria were 75:46:13 patients. Based on the most diagnosis which used this antibiotics, aminoglycoside used for sepsis was 50%, then pneumonia and bronchopneumonia (26.70%). Meropenem used for sepsis with a percentage of 45.54% and vancomycin for pneumonia was 15.38%. Based on the appropriate dose of guideline, 100% for

aminoglycoside, 42.22% for meropenem, and 69.23% for vancomycin. Based on the duration of appropriate use the highest power duration is 10 days with the percentage of 86.70% for aminoglycoside, the most duration of administration for ≤ 7 days with a percentage of 56.52% for meropenem and the duration of appropriate use 61.54% for vancomycin. **Conclusion:** Aminoglycosides, meropenem and vancomycin are appropriate to the diagnosis. But still found discrepancies in the dosage and duration of the antibiotic treatment.

KEYWORDS: *Aminoglycoside, antibiotics, meropenem, vancomycin*

ID 127. Utilization Review of Anti-peptic Ulcer Drugs at an Outpatient Pharmacy Setting of a Private Hospital in Malaysia

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Introduction: Anti-peptic ulcer drugs (APUDs) such as proton pump inhibitors (PPI), H₂ receptor antagonists (H₂A), antacids are widely prescribed. **Objectives:** This study is aimed to describe the utilisation pattern of APUDs based on WHO DDD and identify most commonly used APUD in the selected hospital. **Methods:** A retrospective study was carried out in outpatient of the selected hospital for year 2017. Sample size was calculated using Raosoft. Defined Daily Dose (DDD) of APUDs and direct drug cost were calculated. Data were collected through electronic medical record by retrieving patients' registration number. Inclusion criteria were patients above 18 years old and APUDs prescribed for gastrointestinal related indications. **Results:** A total of 160 prescriptions were randomly selected for data analysis. Based on the DDD calculated, Pantoprazole 20mg was the most prescribed drug among PPI, about 1.26 DDD / user / day. Actal is the most commonly used drug among the antacids, which is about 7.11 DDD / user / day. Besides, there are 5.4 days supplied per user for this drug. Dextlansoprazole 60mg is the most expensive drug among all the PPI listed in hospital formulary. It has 18.5 days supplied/user, which is the second shortest duration of treatment among all the other PPIs. In contrast, omeprazole 20mg is the lowest cost PPI but the duration supplied per user is longer resulting in higher total cost of therapy. **Conclusion:** PPIs were the most commonly prescribed APUD. Based on

the DDD calculated, Pantoprazole 20mg was the most prescribed drug among PPI.

KEYWORDS: *Defined daily dose, gastrointestinal tract, pharmacoepidemiology, peptic ulcer diseases, prescribing pattern*

ID 128. Antidiabetic Activity of Yacon (*Smallanthus Sonchifolius*) Leaves Extract and Its Fractions in the Zebrafish Model

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Introduction: Yacon (*Smallanthus sonchifolius*) is one of the medicinal plants that have antidiabetic effects and used traditionally in Indonesia. The leaves of yacon are having potential in the development of diabetic treatment due to their diabetic activity. **Objectives:** To evaluate the antidiabetic activity of ethanolic extract and its fractions (n-hexane, ethyl acetate and methanolic) of yacon leaves in alloxane-induced diabetic zebra fishes. **Materials and Methods:** Zebra fishes were divided into seven groups (n=10). One for the normal group, 2 control groups, and 4 treatment groups. Control and treatment groups soaked in alloxan solution 300mg/100mL for 1 hour and moved to 2% glucose solution of 2L water for 7 days. On the 7th day, the treatment groups were given ethanolic extract and the fractions of yacon leaves at concentration 25–100 mg/L water. The blood sample was collected by severed the heart through decapitated and were analysed for glucose levels on 8th day by using a glucometer. **Results:** The result showed that ethanolic extract and the fractions exhibited significantly effect to reduce blood glucose levels of diabetic zebra fishes and these effects are quite comparable with metformin 21,53 mg/L (a standard drug used as a positive control group). **Conclusion:** it is concluded that ethanolic extract and its fractions of yacon leaves have significant antidiabetic activity and have the potential to be an effective therapy for the treatment of diabetic.

ID 129. Safety, Efficacy and Durability of Efavirenz-based First Line Regimen

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Introduction: The survival rate of Human Immunodeficiency Virus (HIV)-infected individuals has been prolonged by the evolution and refinement of highly active antiretroviral therapy (HAART). **Objective:** We aimed at evaluating the efficacy, safety and durability of efavirenz (EFV) as first-line regimen. The results presented are part of a larger cohort study. **Materials and Methods:** In a retrospective, 24-month follow-up study, medical records of eligible subjects who were HIV-positive, ART-naïve, and who were started on EFV at a secondary hospital in Selangor were scrutinised. Information on patient demographic characteristics, CD4+ cell counts, HIV-RNA viral load, adverse drug reactions (ADR), and the reasons for discontinuing treatment were extracted from the electronic hospital information system. Proportions of subjects with an undetectable HIV viral load and improved CD4+ counts, those who continued the treatment for one year and longer, and those with “ADR, which required intervention”, provided the measures of treatment efficacy, durability and safety respectively. **Results:** A total of 182 individuals were included. After two years therapy, 156 subjects (86%) had “undetectable” viral loads <50 copies/ml and a mean increase of 370 CD4+ cells/mm³ was observed. The most common ADR were neurological-related (39%): giddiness (28%) and insomnia (6%) and these accounted for “ADR, which required intervention”. Cutaneous-related ADR (22%) were common with rash accounting for 12%; lypodystrophy in 14% and weight gain in 2% were observed. Haematological-related ADR were seen in 13%. As for durability, 137 (75%) patients had continued their EFV as part of first-line regimen for longer than one year, and 44 (24%) discontinued EFV within the first year. **Conclusion:** Findings have implications to policy-makers and practitioners. The use of EFV as the preferred non-nucleoside reverse transcriptase inhibitor (NNRTI) was justified as it was effective, well-tolerated, and had considerable durability.

KEYWORDS: Anti-retroviral, policy-making, resource-limited setting

ID 131. Exploring the Consumption of Health Supplement Products among Patients with Chronic Diseases from District Hospitals of Sarawak, Malaysia

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Introduction: Recently, the use of health supplement products are increasing among public in Malaysia. However, there is a lack of studies on the practices and perceptions on supplement products among patients in rural area. **Objectives:** This study aims to assess the prevalence of health supplement products consumption, and to identify practices, perception and factors affecting the use of such products among patients in rural area of Sarawak, Malaysia. **Methods:** This was a multicenter survey conducted in outpatient pharmacy department of 7 districts Hospitals in Sarawak by using a questionnaire. Data was collected from June to August 2018. Binary logistic regression was employed to assess the association between patients' social demographic data and the consumption of supplement products. **Results:** Upon completion of study, data was collected from 350 patients with chronic diseases. Only 24.0% of the patients were actively using supplement products, while 64.3% of them ever used supplement products concurrently with prescribed medicines. Around half (52.0%) of the patients never consult health care providers, but majority of them expressed agreement upon the needs to consult health care providers prior to supplement products use (82.0%) or during the concurrent use of supplement products with prescribed medicines (80.3%). Patients with higher monthly household incomes (> RM 2000) were significantly (odds ratio = 4.23; p < 0.001) more likely to use supplement products than the lower income group (≤ RM 830). **Conclusion:** Tenacious efforts were required to instill quality use of health supplement products among patients from rural area.

KEYWORDS: Health supplement product, factors, prevalence, practice, perception, rural area

ID 132. Public's Knowledge, Attitude and Perception Towards Conventional and Novel Ocular Treatment in Malaysia

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Introduction: One of the major concerns in any pharmacological treatment is the patients' adherence to medication. However, different types of ocular dosage form might result in different response and compliance from the patients. **Objectives:** This study investigated and compared public willingness on different types of dosage form available for ocular treatment. The study also evaluated their willingness on novel approach for the treatment based on their knowledge, attitude and perception (KAP). **Materials and Methods:** This study

was conducted through a set of questionnaire applied to 90 respondents between the age of 18 to 60 years old who lived in Muar and Kuantan, Malaysia. The results were analysed using SPSS software version 22.0 including inferential and descriptive statistics. **Results:** There was no significance difference in knowledge level between all age groups towards different types of dosage form available; eye drops ($p=0.09$), eye ointment ($p=0.252$), medicated contact lens ($p=0.05$), ocular mini tablet ($p=0.06$) and ocular inserts ($p=0.075$). There is variation of result among publics towards different types of dosage form with their willingness to try conventional and novel approach. Eye drops show the highest willingness followed by eye ointment (less willingness). However, most of them show no willingness toward medicated contact lens, ocular mini tablet and ocular insert. **Conclusion:** The respondents showed different preference and willingness toward both conventional and novel approach as ocular treatment. By considering these aspects before developing new formulation and dosage form, it is hope that patient compliance can improve.

KEYWORDS: *Dosage form, KAP, ocular treatment*

ID 133. The Prophylactic Effects of *Kaempferia Galanga* on *Plasmodium Berghei* In Vivo

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Introduction: Today, medicinal plants have been the center focus source to treat malaria. *Kaempferia galanga* was investigated as an antioxidant, antimicrobial and antiparasitic. In vivo *K. galanga* had been proven have low antimalarial effect for severe malaria, but this extract was dominant as prophylactic. **Objective:** The aim of this study was to investigate the chemprophylactic effect of *K. galanga* against *Plasmodium berghei* infection as an in vivo models of malaria. **Materials and Methods:** The prophylactic effects were determine by employing *K. galanga* (50; 100 and 200mg/kg body weight) in mice infected with *P. berghei*. Mice were subdivided into 5 groups (control positive, negative and treatment). Treatment groups received *K. galanga* daily for 3 days before inoculation, then each mouse was inoculated with infected blood containing 10^6 of *P. berghei*. Parasitemia were count every day until 5 days post inoculation. **Results:** At the fifth days after inoculation percent of parasitemia decrease by 50 mg/kg; 100 mg/kg; 200 mg/kg and and negative control were 0.8%; 1.9%; 2.8% and 7.8% respectively. The percentage of parasitemia of *K. galanga* 50mg/kg group had the greatest prophylactic activities compare to control ($p<0.05$). **Conclusion:** The ethanol extract *K. galanga* are potential phrophylactic candidates for news prophylactic agent for malaria.

KEYWORDS: *Kaempferia galangal, plasmodium berghei, prophylactic*

ID 135. In Vivo Antiplasmodial Activity of Methanol Extract of *Terminalia Catapa* in *Plasmodium Berghei* Infected Mice

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Introduction: Malaria is the big five infectious diseases and affecting thousands of people in endemic area in Indonesia. This calls for more effort to develop and focus for search of new antimalarial agent. **Objective:** This study aimed to evaluate the antimalarial activity of the crude extract of *Terminalia catapa* against *Plasmodium berghei* infection in mice as an in vivo model. **Materials and Methods:** The plant sample were collected around Universitas Islam Indonesia. In vivo antiplasmodial activity were treated to 16 male mice into 4 groups. The mice had been inoculated *P. berghei* intaperitoneally with 10^6 parasites/ml. The 2 groups received 100mg/kg and 200mg/kg of crude extract. The two control (negative and positive) were vehicle and chloroquine phosphate (25mg/kg) all were administered orally. Treatment was started when parasitemia each mice was 3–5% then continued for 4 days. Each mouse was examined for percentage parasitemia. **Results:** This study showed that leaves extract of *T. catapa* had antiplasmodial activity. The parasitemia level of 100mg/kg/day, 200 mg/kg/day and negative control were 4.9%, 2.23% and 9.65% respectively. The highest antimalarial activity was found at dose 200mg/kg body weight. We found a significant decrease of parasitemia in each treatment group compare to negative control ($p=0.000$). **Conclusion:** It can be concluded that *T. catapa* have antiplasmodial activity.

KEYWORDS: *Antiplasmodial, plasmodium berghei, terminalia catapa*

ID 136. Almond as Sleep Aid: A Feasibility Study among Healthy University Students with Sleep Disruption Symptoms

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Introduction: Disruptions to normal circadian rhythm may lead to daytime fatigue and sleepiness, impaired

cognitive functioning, depression, mood disturbances and impaired interpersonal relationships. Benzodiazepine is used to help people fall asleep, however its chronic use can also lead to undesired effects. Thus it is only encouraged to be consumed for a short period. Therefore, alternative options to overcome this problem is needed. Almond is found to have suppressive effect on the anxiogenic activity, and it was also identified that 1600mg/kg of almond has similar anxiolytic effect as diazepam. **Objective:** This study was conducted to identify potential effect of almond to improve sleep in individuals with sleep disruption symptoms. **Materials and Methods:** Thirteen (n=13) university students were recruited, and each participant was required to download mobile-phone application to record sleep-wake patterns for 14-consecutive-days. In week 1, participants only measured sleep-wake patterns without any intervention. In week 2, participants consumed 400mg/kg of almond 30 minutes before sleep. Participants also completed a set of self-reported questionnaire and Pittsburgh Sleep Quality Index (PSQI) to assess sleep quality. Participants were followed-up individually; data were analysed based on case-per-case intervention. **Results:** Baseline PSQI score showed "poor" sleep in all participants. Six (n=6) participants showed improvement in total sleep time (TST), percentage of sleep efficiency (SE %) and sleep onset latency (SOL) after consuming almond in the intervention week. **Conclusion:** Study suggested that almond has the potential effect in improving certain sleep parameters in individual with sleep disruptions. Future study can be conducted to further explore the effects of almond on sleep-wake patterns.

KEYWORDS: Almond, pittsburgh sleep quality index, sleep-wake patterns, sleep efficiency, sleep onset latency, total sleep time

ID 138. Development and Assessment of Modified Fagerstrom Test for Nicotine Dependence Scale Among Malaysian Single Electronic Cigarettes Users

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Introduction: The Fagerstrom test for nicotine dependence (FTND) is the most widely used scale for assessing nicotine dependence on conventional tobacco

cigarettes (TCG). But the FTND does not evaluate the subject's nicotine dependence to electronic cigarette (EC). **Objectives:** To developed and assess an equivalent modified FTND scale which measures the nicotine dependency via EC. **Materials and Methods:** The investigator developed the equivalent modified FTND scale which scores identical to original scale i.e. 0 to 10. The developed scale piloted among 15 EC single users i.e. use only EC verified by carbon monoxide (CO) level of < 8 ppm. The assessment of the scale was done among 69 EC single users and observed for one year to determine their nicotine status. **Results:** The modified scale revealed an acceptable Cronbach's alpha value of 0.725. Further test-retest reliability of the scale showed a satisfactory spearman's rank correlation coefficient value of 0.730 (p > 0.05). A one-year observation showed that out of 69 single users, 11 single users completely stopped nicotine intake, 24 remained as EC single users, 15 shifted to dual-use and 19 relapsed to TCG. Surprisingly, the EC users who completely stopped nicotine intake after one year had a low average nicotine dependence value of 3 that was measured by modified FTND scale at the baseline. **Conclusion:** The modified FTND scale precisely identify the physical dependence to nicotine via EC. Therefore, as per the current study results the modified FTND scale can apply in any EC related studies to assess nicotine dependency on EC.

KEYWORDS: Electronic cigarettes, nicotine dependence, tobacco cigarettes

ID 139. Amlodipine Induced Gingival Hyperplasia in Military Personnel: A Case Report

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Introduction: Malaysian Armed Forces military personnel undergo routine healthcare assessment. The Armed Forces Medical Administration and Technical Instructions (AFMATI) define this into PULLHEEMS Employment Standard and DENTAP dental readiness. Assessment requires Medical Officer (MO), Dental Officer (DO) and pharmacist's multidisciplinary expertise. **Objective:** This is a case report of a 29 years old Royal Malaysian Air Force male corporal who reported for assessment. He has history of hypertension and is taking tablet amlodipine 10mg daily. **Materials and Methods:** On intraoral examination, marginal and interdental gingival enlargement was covering almost coronal one-third of maxillary and mandible anterior

teeth. Gingival was pink in color with erythematous area and lobule surface. Margins were rolled out with loss of normal gingival scalloping. On palpitation, gingival was firm and resilient in consistency. **Results:** The DO performed a session of debridement with scaling, advised for regular oral hygiene and case was referred to the MO. MO discussed with the pharmacist and agreed with suggestion to replace amlodipine with tablet perindopril 8mg daily. Significant changes were noticed after one month. Gingival hyperplasia is one of the side effects associated with calcium channel blockers. Pathogenesis is categorized into inflammatory and non-inflammatory pathway. It can be treated with scaling, root planning, drug substitution, surgical excision, maintenance and supportive therapy. **Conclusion:** Drug induced gingival hyperplasia is rarely reported in Malaysia due to lack of coordination between health care professionals in the health care system. The multidisciplinary team approach in assessing military personnel is fundamental in preventing or detecting and minimizing non-combat casualties.

KEYWORDS: Amlodipine, case report, gingival hyperplasia, military pharmacy, malaysia

ID 140. Depressive Disorder Patients' Perceived Level of Involvement in Clinical Shared Decision-Making: A Multicentre Study

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Introduction: Clinical shared decision-making (SDM) is a process where clinicians and patients share the best available evidence to decide on treatment options.

Objectives: The study aims to investigate the depressive disorder patients' perceived involvement of SDM process during outpatient clinic consultations. **Materials and Methods:** A multicentre cross-sectional study was conducted from a sample of 15 psychiatric clinics in Malaysia, between June 2018 and February 2019. Consecutive sampling method was used, whereby any adult patients diagnosed with major depressive disorders (MDD), require antidepressant treatment and understand English or Malay language were included in this study.

STROBE guidelines for cross-sectional studies were used to report the findings, with Shared Decision-Making Questionnaire (SDM-Q-9) was the primary outcomes measure. A descriptive analysis was reported using frequencies and percentages. Statistical analyses were performed using the Mann-Whitney tests. **Results:** A total of 160 patients (60 males and 100 females, mean age \pm SD: 37.1 \pm 14.2 years) were included as the subjects of this study. SDM-Q-9 total score (median score \pm SD: 82.2 \pm 15.4 transformed scores) indicated a high degree of perceived involvement, with statistically significant different perceptions, stratified by ethnicity, religion and employment status. Differences were further observed when item by item analysis of SDM-Q-9 was applied. **Conclusion:** The result of this study suggests that SDM is accepted by MDD patients. Further research should be implemented by emphasizing on patients' ethnicity, religiosity, and employment status, and making use of the patient decision aid, to assist patient involvement during the SDM process of antidepressant use.

KEYWORDS: Antidepressant, depression, multicentre, shared decision-making

ID 141. Formulation and Characterisation of PEG-PLGA Nanocapsules Containing 5-Fluorouracil for Oral Cancer Treatment

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Introduction: 5-FU has been widely used as an anti-cancer drug for digestive organs cancer including oral cancer. However, this drug asserts numbers of drawbacks such as its non-selective biodistribution and short half-life. The medical incapability of this drug can cause unfavourable side effects to the patient. **Objectives:** We aim to formulate a competent drug carrier for 5-FU using PEGylated PLGA nanocapsules to improve its drug delivery system, for future oral cancer therapy. **Materials and Methods:** The polymer conjugate was evaluated using FT-IR. 5-FU was loaded to the formulated conjugate with three different oil core materials to form nanocapsules using nanoprecipitation method. Nanocapsules were characterised for their physico-chemical properties and shelf-life stability. All results were analysed using SPSS and presented as mean \pm standard deviation.

Descriptive test and Multiple Comparison test were used in this study with a 95% CI ($P < 0.05$) significance level. **Results:** The castor oil-cored nanocapsules observed the smallest in size with a mean diameter of 170.7 ± 0.75 nm without drug and 168.3 ± 0.06 nm with 5-FU, with mean PDI of 0.160 ± 0.03 without 5-FU and 0.184 ± 0.01 with 5-FU. All formulations exhibited a negatively-charged surface with zeta potential range of 35–55 mV. The presence of the 5-FU did not have a significant affect to the size, PDI and zeta potential for the castor oil-cored nanocapsules. Moreover, the castor oil-cored and olive-oil-cored nanocapsule formulations exhibited good physical stability at 4°C throughout 60 days period of storage. **Conclusion:** The castor oil-cored nanocapsules exhibited as the most appropriate carriers for 5-FU.

KEYWORDS: 5-fluorouracil, drug delivery, nanocapsules, oral cancer, PEG-PLGA

ID 142. Adopting Mission Command to Improve Patient Waiting Time in Outpatient Pharmacy Department of 95 Tuanku Mizan Armed Forces Hospital

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Introduction: Waiting time in Outpatient Pharmacy Department (OPD) has been a concern. Quarter 1 and quarter 2 of the year 2018, OPD received, filled and dispensed 15,473 and 14,302 prescriptions respectively. The average patient waiting time was 45 minutes, exceeding the 30 minute department's objective quality target. Patient satisfaction study shows that 57.8% of responders branded the waiting time as satisfying but requested for improvement. **Objective:** This report analyses the impact of using mission command principle to achieve intended average patient waiting time without compromising patient safety. **Materials and Methods:** The indicator measured is the monthly average patient waiting time after intervention introduced in September 2018. **Results:** Quarter 3 and quarter 4 of 2018, OPD oversaw 16,385 and 16,696 prescriptions respectively. Average patient waiting times in September to December 2018 are 29 minutes, 27 minutes, 21 minutes and 15 minutes respectively. Patients receiving medications within 30 minutes time target had increased to 100% for quarter 4 of 2018 and this continued for quarter 1 and quarter 2 of 2019. **Conclusion:** Military operations conduct in complex and uncertain environments which demands continuous and mutual adaptations. Mission command is the exercise of authority and direction by the commander using mission orders to enable disciplined initiative within the commander's intent to empower personnel in the conduct of operations. This principle

was adapted at OPD tactical level and integrated with the department's objective quality to guide and synchronize the team. Adapting this principle among health service support personnel has shown positive outcomes.

KEYWORDS: Mission command, military pharmacy, malaysia, patient waiting time

ID 143. Identification of Potentially Inappropriate Medications in Geriatric Patient at Government Hospital in South Jakarta Using Beer's Criteria

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Introduction: The prevalence of geriatric patient in Indonesia is increasing in trend. Polypharmacy and comorbidities cause them susceptible to get Potentially Inappropriate Medications (PIMs). Beer's criteria 2015 can be used as a reference to identify PIMs in geriatric medications. **Objectives:** The aims of this study were to identify PIMs from patient medications and to obtain the characteristics of geriatric patients that were identified with PIMs. **Materials and Methods:** This cross-sectional study carried out on geriatric patient's medical records aged ≥ 65 years that admitted in medical ward on January-September 2015. The data collected retrospectively were evaluated using Beer's criteria and analyzed descriptively. **Results:** The result showed that 57.14% of geriatric patients were identified with at least one PIM. The highest number of PIMs was found in the age range of 60–74 year-old (87.0%). The patients identified with PIMs mostly hospitalized in more than 12 days (49.0%), administered 9–12 medications (90.0%) and were having more than 5 comorbidities (46.0%). Diuretics are listed in Beer's criteria as medication that should be used in caution. However, it was the most prevalent PIMs (32.9%) found in this study. Ranitidine use in patient with reduced renal function without dosage adjustment was found in 17% of total PIMs. The same number was found in the use of Alprazolam and ketorolac. **Conclusion:** PIMs are commonly found in geriatric patient and may cause drug related problems. Pharmacists should routinely reconcile geriatric medications and eliminate PIMs when possible. It might improve their medication appropriateness and safety.

KEYWORDS: Beer's criteria, geriatric patients, PIM

ID 144. Assessing Public Awareness and Perception towards Halal Pharmaceuticals in Pasir Gudang, Johor

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Introduction: Although Halal pharmaceuticals had gained the recognition from the world, the studies on the awareness and perception of public in Malaysia regarding halal pharmaceuticals is still limited. The development of Iskandar Halal Hub in Pasir Gudang, Johor area was expected to give a huge impact to the population around. **Objective:** This study aimed to assess the public's awareness and perception towards halal pharmaceuticals in Pasir Gudang, Johor. **Materials and Methods:** This is a questionnaire based cross-sectional analysis using a pre-validated questionnaire adopted from Atif *et al.* 2013. Malaysian citizen aged 18 years and above resided in Pasir Gudang, able to read and understand Malay language or English were included. **Results:** A total of 415 respondents with race composition of Malay (n=216, 52%), Chinese (n=149, 35.9%), Indian (n=41, 9.9%) and others (n=9, 2.2%) which reflect the Johor Bahru population. Results revealed that majority of respondents have good level of awareness (n=348, 83.9%) and positive perception (n=407, 98.1%) towards halal pharmaceuticals. The mean score for awareness of halal pharmaceuticals was 6.2 ± 1.65 (out of 8) while the mean perception was 30.6 ± 4.57 (out of 35). There was a significant difference between level of awareness towards halal pharmaceuticals among the different ethnicities and religion. Positive yet moderate significant correlation can be seen between level of awareness and perception towards the halal pharmaceutical ($r=0.562$, $p<0.001$). **Conclusion:** In conclusion, the awareness and perception of the public in Pasir Gudang towards halal pharmaceuticals are relatively good. The better awareness on halal pharmaceuticals is associated with positive perception.

KEYWORDS: Awareness, consumer, halal, pharmaceuticals, perception

ID 145. Evaluation of Statins Prescription in Older Adults Admitted to General Medical Wards in University Malaya Medical Centre (UMMC): A Prospective Cross-Sectional Study

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Introduction: Statins are currently recommended for primary prevention in patients between 40–75 years of age at high risk of cardiovascular disease (CVD) and for secondary prevention in all patients ≤ 75 . Current statins use has not been well characterized in older adult patients. **Objectives:** To evaluate the statin prescriptions among older adults admitted to UMMC and to identify potential drug interactions associated with statins.

Materials and Methods: The study was conducted prospectively, including all patients aged ≥ 65 years admitted to general medical wards in our University Hospital from February to April 2015. Data on patients' demographic details, functional status, cardiovascular risk factors and statin prescription status were retrieved from the patients' medical records. **Results:** Out of 256 patients (average age 78 ± 7.61), 120 (46.9%) were prescribed statins. Sixty-five percent of statin prescriptions were for secondary prevention and 38.3% of patients on statins had a moderately severe to severely dependent functional status. Most of the patients were prescribed simvastatin (86.7%). The most common concurrent medications prescribed that may interact with statins were amlodipine (49.5%), omeprazole (37.1%) and ranitidine (33.3%). **Conclusion:** Nearly half of the older adult inpatients were prescribed statins for secondary prevention of CVD. A significant proportion were severely dependent in their functional status and on multiple medications with potential interactions with statins. It is worthwhile reviewing statin prescriptions with the aim of discontinuation in patients who have a guarded prognosis and a heavy tablet burden. These measures can substantially reduce morbidity and cost to individuals and healthcare services of countries.

KEYWORDS: Older adult, primary prevention, secondary prevention, statins

ID 146. Practices of Injectable Antibiotics Preparation and Administration among Healthcare Practitioners in Multidisciplinary Wards

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Introduction: Injectable antibiotics with rapid delivery to infection sites are preferable in healthcare settings. High rates of inappropriate injectable antibiotics preparation and administration (IAPAA) may cause antimicrobial resistance, thrombophlebitis and mortality. **Objectives:** This study aimed to identify rates of inappropriate IAPAA among healthcare practitioners and possible contributing factors and to evaluate effective strategies in overcoming such practice. **Materials and Methods:** A cross-sectional study was undertaken in Hospital Tanjung Karang multidisciplinary wards from August 2018 to February 2019. A total of 148 samples were randomly selected and directly observed. A self-generated data collection form was used. Evaluation was carried out following several interventions. Rates of inappropriate IAPAA were analyzed with SPSS Statistics, where descriptive statistics were employed. **Results:** Rate of inappropriate IAPAA upon verification was 85.8%. Slow intravenous and less frequently used antibiotics were all inappropriately prepared and administered. Possible factors included

uncommon drug procedures and inadequate references, knowledge and monitoring. The rate was reduced by 35.1% after interventions. Reconstitution concentration and administration duration revealed marked reduction rates from 66.2% to 6.2% and 81.1% to 47.3% respectively. **Conclusion:** Rate of inappropriate IAPAA was successfully reduced from 85.8% to 50.7% with proper measures. Further innovations including injections preparation and administration alert system should be implemented.

KEYWORDS: *Injectable antibiotics, preparation, administration*

ID 147. Evaluation of Antibiotic Prescribing Pattern during Hospitalisation: A Preliminary Clinical Audit from a Malaysian Teaching Hospital

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Introduction: Inappropriate prescribing of antibiotics by healthcare providers is a leading contributor to antibiotics resistance and increasing hospital stay worldwide. There is a relatively few data available on how appropriately the changing of antibiotics during the same hospital stay occurs. **Objectives:** This study aimed to investigate and evaluate the prescribing pattern by healthcare providers during hospitalisation in a Malaysian teaching hospital. **Materials and Methods:** a preliminary clinical audit (N=70) was conducted over four weeks in the wards of a Malaysian teaching hospital. The evaluation was performed according to the National Antibiotic Guidelines (NAG), including adult patients more than 18 years old who were prescribed with at least two different antibiotics throughout the same hospitalisation period. Descriptive statistics were used to present the findings. **Results:** The most commonly prescribed as a first antibiotic was amoxicillin/clavulanate combination (25.7%) while cefuroxime was the most common second antibiotics choice contributing to 16.7% compared to other antibiotics. Besides, a considerable number of cases (30%) have their first antibiotic change after one day only. Multiple antibiotics courses were more prevalent among patients with lower respiratory tract infections compared to other diseases. Surprisingly, only about 57.1% of the prescribed antibiotics regimens complied with NAG recommendation mainly due to the inappropriate choice of prescribed antibiotic. **Conclusion:** There is a need to improve further the appropriateness of antibiotic prescribing by focusing on supporting the rational choice of prescribed antibiotics throughout the hospitalisation.

KEYWORDS: *Antibiotics, clinical audit, prescribing patterns*

ID 149. Knowledge and Perceptions of Patients with Type 2 Diabetes Mellitus towards Cardiovascular Disease Prevention: A Review

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Introduction: Patients with type 2 diabetes mellitus (T2DM) are at significantly higher risk of developing Cardiovascular disease (CVD). There is a lack of literature that describes and summarise T2DM patients' knowledge and perception of CVD prevention. **Objectives:** To describe the extent of knowledge and perceptions of illness among T2DM patients concerning the current CVD preventive approaches. **Methods:** We adopted the methodology of systematic scoping review to guide in selecting the included articles, extracting and charting the results. We have retrieved the included studies from three scientific databases; Google Scholar, Science Direct and PubMed. A multistage screening process was followed. It considers relevancy, publication year (2009-2018), English language, and article type (original research involving T2DM patients). We formulated research questions focused on the assessment of levels of knowledge and perceptions of the illness relevant to CVD prevention. **Results:** A total of 16 studies were included. The findings showed variation in terms of T2DM patients' knowledge and perceptions of individual CVD risk factors. The patients tended to overemphasize the role of lab tests in assessing CVD risks. It seems that the need for multifactorial risk assessments was overlooked. There were relatively negative perceptions of the benefits of CVD preventive medication therapies. The majority of the studies highlighted knowledge deficits. The patients' perceptions were linked to their degree of adherence to lifestyle and pharmacotherapy recommendations. **Conclusion:** This work underpinned the prevalence of low levels of knowledge as well as negative perceptions towards T2DM illness, and its recommended CVD prevention measures. Therefore, customized initiatives and educational interventions for T2DM patients, concerning CVD preventive measures are probably needed and are strongly recommended.

KEYWORDS: *knowledge, perception, type 2 diabetes mellitus, diabetic patient, cardiovascular disease, risk prevention*

ID 150. Knowledge and Adherence to Self-Care Practices among Patients with Type 2 Diabetes Mellitus: A Review of influencing factors and interventions

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Introduction: Self-care practices such as regular exercise, diet modifications, correct intake of prescribed medications, and routine blood glucose monitoring are essential to the success of the T2DM care plan and achieving the desired outcomes. Consequently, knowledge of and adherence to the recommended self-care practices among patients with T2DM are associated with an increased likelihood of achieving clinical outcomes. **Objectives:** To describe and summarize the current evidence concerning the extent of knowledge and adherence to self-care practices among T2DM patients and the associated factors. Also, to highlight the interventions seems capable of enhancing knowledge and adherence to T2DM self-care practices. **Methods:** The step-wise scoping review methodology by Arksey and O'Malley was followed. We have retrieved the included studies by referring to three scientific databases, Google Scholar, Science Direct, and PubMed. We followed a multistage screening process that considers relevancy, publication year (2011-2019), English language, and article types (original research articles). We formulated research questions focused on the extent of knowledge and adherence levels related to T2DM, particularly self-care practices and its appropriate interventions. **Results:** Sixteen articles have been included, and the majority (n=15) was following the quantitative approach. Only one study was adopting an experimental design. Overall, most of the findings highlighted the knowledge deficits and suboptimal adherence to T2DM self-care practices. The correlation between the knowledge level, adherence to self-care practices, and attainment of glycemic control were underpinned across the included studies. There was a lack of sufficient studies that designed and tested a targeted intervention to enhance patients' knowledge and adherence to T2DM self-care practices. **Conclusion:** This work suggests that further targeted Interventions to promote T2DM self-care practices are still needed. Also, future work has to promote the practice of individualized T2DM self-care that considers the variety of modulating factors in every case.

KEYWORDS: knowledge, perception, type 2 diabetes mellitus, adherence, self-care practices

ID 152. Profiling Severity Level of Potential Drug-Drug Interactions in Patients with Chronic Disease at Coastal Surabaya, Indonesia

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Introduction: Drug combinations can be given to improve the effectiveness and minimize side effects of therapy. Drug interaction screening is rarely done by pharmacist, especially in community pharmacies. **Objective:** To profile the interaction of drugs based on the severity and mechanism of potential drug-drug interactions (pDDIs) in the Surabaya coastal pharmacy. **Material and Methods:** pDDIs are identified using Medscape and Stockley's Drug Interaction. Sample of this study is prescription of chronic disease patients in 7 coastal pharmacies for a month. **Results:** A total of 113 prescriptions were analyzed in this study. We found 39 pDDIs from 22 prescriptions (19.5%). Based on the severity of drug interactions, there were 18 (46.2%) minor, 14 (35.8%) medium, 6 major (15.4%) and 1(2.6%) contraindicated pDDI. The most common mechanism for pDDIs is pharmacokinetics 23 (58.9%) followed by pharmacodynamics 15 (38.5%) and 1 (2.6%) unknown mechanism. **Conclusion:** Prevalence of contraindicated and major patients was small but need monitoring the effect of pDDIs. Pharmacists play a role in finding, preventing and providing solutions to pDDIs so that patients get optimal therapy.

KEYWORDS: Chronic disease, drug interaction, potential drug-drug interaction, prescription

ID 153. Chemical Compound Analysis and Antioxidant Study of Tobacco Leaves (*Nicotiana tabacum* var. *Virginia*) Fraction

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Introduction: Phenol and flavonoid compounds provide antioxidant activity that is able to inhibit various oxidative reactions that harm our body. Tobacco is one of Indonesian's important export commodities and its leaves are more widely used as cigarette material. Its methanol extract reported to be an active antioxidant. **Objectives:** Aims of this study was to determine the total phenol and flavonoids compound from tobacco (*Nicotiana tabacum* var. *Virginia*) fraction. **Materials and Methods:** the extract was fractionated with hexane, dichloromethane, ethyl acetate, butanol and water. Furthermore, the best fraction also evaluated for its antioxidant activity with DPPH (2,2-diphenyl-1-picrylhydrazyl) and FTC (ferric thiocyanate) method and analysis chemical compounds with GC-MS. Total

phenolic and flavonoid content was determined with 'Folin-Ciocalteu' and AlCl_3 reagent where gallic acid and quercetin were used as a standard. **Results:** The research proved that the water fraction gave the highest total phenol and flavonoid compounds compared to other fractions with the values were respectively 12.8696 mg GAE/g and 8.3346 mgQE/g. Pyridine was detected at 84.47% with GC-MS. The best fraction was evaluated for its antioxidant activities and IC50 was 75.0554 $\mu\text{g/mL}$ with DPPH method and 67.9011 $\mu\text{g/mL}$ with FTC method. **Conclusion:** This study revealed that water fraction was potential source of phenolic compounds from of *Nicotiana tabacum* var. *Virginia* and provide antioxidant activity.

KEYWORDS: Antioxidant, flavonoid, nicotiana tabacum var. virginia, phenol

ID 154. Effectiveness of Conventional Therapies in Thalassemia Care: A Qualitative Exploration of Patient's Perspective

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Introduction: Thalassemia is a chronic health disorder that impairs the psychological and physical well-being of the patients who are diagnosed with it. These patients are subject to a cradle-to-grave system of healthcare in which, they are intensively treated with the conventional treatments provided by the hospitals. **Objective:** This study aims to explore the perceptions of thalassemia patients in relation to the effectiveness of the conventional therapies for Thalassemia healthcare. **Material and Method:** A qualitative method was employed in which purposive and theoretical samplings were combined to explore the issues related to the perceptions of the effectiveness of the conventional therapies among thalassemia patients. A total of 21 consented patients were recruited from the Thalassemia Society of Kedah, Malaysia with face to face interview. **Results:** Nearly all thalassemia patients reported to have relied on the conventional treatment methods to treat and reduce the severity of their disease. In this regard, the patients perceived conventional therapies as effective in reducing amount of ferritin and in increasing the haemoglobin levels. Few patients reported not to comply with their treatment procedures due to fear of infection through blood transfusion, surgery and organ failure due to prolonged treatment. **Conclusion:** In conclusion, patients showed positive views about the conventional therapies carried out for thalassemia. However more intensive counselling and education is important to

comply with the treatment procedures. Further research is therefore required to look into the patients who have decided to abstain from the conventional therapies for thalassemia treatment.

KEYWORDS: Conventional therapies, qualitative, thalassemia

ID 155. Pharmacist Registration Management System (PRISMA): Is The System User Friendly?

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Introduction: Application for Pharmacist annual certificate previously done by the Business Licensing Electronic Support System (BLESS). A survey in 2016 reported 77.6% of the respondents express dissatisfaction towards BLESS due to not user-friendly. Thus, Pharmacist Registration Management System (PRiSMA) was developed in 2017 to facilitate the problem. **Objectives:** This study aims to evaluate users' satisfaction and perceived ease of use in operating PRiSMA. **Materials and Methods:** Online survey questionnaires were distributed to all applicants from April 2018 to April 2019. The questionnaire consists of 10 questions assessing acceptance of the layout design, ability to operate the system, and applicant's overall satisfaction. Each question has a rating scale of 1 to 5 with higher number indicating higher positive response. Descriptive statistic and Pearson correlation were performed using SPSS version 21, and the p-value was set at $p < 0.05$ for statistical significance. **Results:** A total of 5104 complete responses analysed. The mean score calculated for acceptance of layout design and ability to operate system was 4.02 (SD 0.68) and 3.99 (SD 0.74) respectively. A strong positive correlation identified between acceptance of the layout design and ability to operate the system ($r=0.86$; $p=0.01$). More than seventy percent of respondents scored above mean of 4.02 (SD 0.84) for overall satisfaction. **Conclusion:** Overall users' satisfaction was found to be high for PRiSMA. The layout design was learned to impact users' ability to operating the system significantly. Further study is recommended to dwell more on users' experience to continue improving the usability of the PRiSMA.

KEYWORDS: Annual certificate, PRiSMA, User satisfaction

ID 156. Prevalence and Factors Associated with the Development of Antenatal Mental Disorders among Malaysian Women

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Introduction: Women experience some physical and psychological disturbance throughout their pregnancy due to the hormonal changes in the body which predispose them to antenatal mental disorders. Many studies have been conducted on social support and antenatal depression, but less attention have been given to the association between social support and other antenatal mental disorders such as anxiety and worries. **Objectives:** The aim of this study was to determine factors associated with antenatal anxiety, worries and depression. **Materials and Methods:** A total of 262 women attended antenatal visit at four Mother and Child Health clinics in Pahang participated in this **cross-sectional study**. The social support, anxiety, worries, and depressive symptoms were measured using the Multidimensional Scale of Perceived Social Support (MSPSS), State Trait Inventory (STAI), Cambridge Worry Scale (CWS), Edinburgh Postnatal Depression Scale (EPDS), respectively. **Results:** The prevalence of antenatal mental disorders as reported by the participants were 77.5% had anxiety, 21.0% had worries, and 22.5% had depressive symptoms. Whilst women's age and period of gestation were associated with anxiety (p value = 0.017 and 0.001), occupational status were associated with worries during pregnancy (p value= 0.033). Women's age, race and educational level were found to be associated with antenatal depressive symptoms (p =0.045, 0.021, and 0.001). It was also found that social support associated with worries during pregnancy (p =0.019) but not with anxiety and depressive symptoms (p = 0.213, 0.407). **Conclusion:** This study suggested that social support plays a significant role in alleviating worries during pregnancy. Healthcare professionals should aware that women's age, period of gestation, occupational status, race and educational level are associated with antenatal mental disorders.

KEYWORDS: Antenatal, anxiety, depressive symptoms, social support, worry

ID 158. Knowledge and Practice of Parents Towards Childhood Immunization in Rompin, Pahang, Malaysia

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Introduction: The childhood immunization can be considered as mortality prevention during the last decades particularly among children under 5 years of age. Parents' knowledge and practices regarding immunization are likely to be a major factor that could contributed a successful immunization. As the primary health decision makers for their children, the knowledge and practice of parents towards immunization is a vital issue to improve the children health as well as prevention of disease. **Objectives:** The objective of present study was to determine the knowledge, and practices of parents regarding childhood immunization. **Material and Methods:** The cross-sectional descriptive study was conducted among parents in Rompin, Pahang, Malaysia. A set of self-administered questionnaires that consist 20 questions was used to examine the level of knowledge and level of practice on childhood immunization among 153 parents. The descriptive analysis was shown percentages and frequencies. The association between the level of knowledge and practice on childhood immunization of parents was analysed using chi-square test, $p < 0.05$ was considered as statistically significant. **Results:** Out of 153 parents surveyed, 82 (53.6%) parents have high level of knowledge and 111(72.5%) parents have a good practice on childhood immunization. There was a strong positive correlation between the knowledge and practice on childhood immunization among the parents ($r = 0.841$; $p = 0.000$). **Conclusion:** Although parents had adequate knowledge and practice on some aspects regarding childhood immunization, gaps were identified. There is a need for educational interventions to upgrade parents' knowledge especially for resident of rural areas.

KEYWORDS: Childhood, immunization, knowledge, practice, parents

ID 160. Steroidogenic Effects of *Eurycoma longifolia* Standardized Extract in Rat Model of Polycystic Ovarian Syndrome

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Introduction: Female reproductive disorders are multifaceted in nature and the treatment of polycystic ovarian syndrome has remained a challenge in the gynaecological field. **Objectives:** *Eurycoma longifolia* has long been used for enhancement of the male reproductive functions. This study sought to elucidate its effects in the female reproductive system. **Materials and Methods:** *Eurycoma longifolia* standardized extract (TAF 273) was tested on rats representing the female polycystic ovarian syndrome (PCOS) following induction with a

single subcutaneous injection of estradiol valerate (2 mg/rat). At the end of two months, clomiphene citrate and TAF 273 (25, 50 and 100 mg/kg) were administered daily via oral gavage for 28 consecutive days. Serum testosterone, oestradiol, progesterone, luteinizing hormone and follicle stimulating hormone levels were measured followed by assessment of ovary histomorphology. Steroidogenic enzymes were also examined in histological paraffin sections using HRP-DAB detection method. **Results:** The expression levels of CYP11A1, CYP17A1 and CYP19A1 genes were detected by quantitative RT-PCR. TAF 273 extract at 100 mg/kg was found to possess beneficial effects in improving PCOS condition by restoration of the oestrous cycle and improvement of ovarian morphology as observed by the presence of healthy follicles and corpora lutea indicating the process of ovulation. Hormonal imbalances and expressions of steroidogenic genes were also found to be attenuated probably through its action on oestradiol hormones and CYP19A1 gene. **Conclusion:** Results obtained showed that the standardized extract has the potential in maintaining normal functions of the female reproductive system and may have economic value in the management of female disorders and reproductive health.

KEYWORDS: *Eurycoma longifolia*, estradiol valerate, female reproductive disorder, polycystic ovarian syndrome, steroidogenic enzymes

ID 161. Antibacterial Activities of Ethanol Extracts of Jernang Resin (*Daemonorops draco* Blume) Against Both *Salmonella typhi* and *Streptococcus mutans*

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Introduction: The resin compound is obtained from Jernang (*Daemonorops draco* blume), a plant that grows in the tropical rainforests of Indonesia. **Objectives:** This study was undertaken to determine the antibacterial ability of ethanol extract of Jernang resin against both *Salmonella typhi* and *Streptococcus mutans*. **Material and Methods:** The crude extract was prepared by soxhlet extraction in ethanol, is then fractionated vacuum liquid chromatography (VLC) with increasing solvent polarity starting from n-hexane (100%); n-hexane: ethyl acetate (80:20); ethyl acetate: methanol (40:60) up to methanol (100%) by. The antibacterial activity were evaluated using the disc diffusion method, these were compared with that of standards chloramphenicol as positive control and DMSO as a negative control. **Results:** Determination of the antibacterial activity, we verified the diameter of inhibition of growth zone against *Salmonella typhi* at the variation of the extract concentration were 0.00mm/10ppm, 9.03mm/50ppm,

8.4mm/100ppm, 11.73mm/500ppm. These were compared with that of standards chloramphenicol (21.03mm/300ppm) and DMSO (0.00mm/300ppm). On the other hands, the diameter of inhibition of growth zone against *Streptococcus mutans* at the variation of the extract concentration were 9.33mm/50ppm, 9.83mm/75ppm, 10.67mm/100ppm, 11.5mm/125ppm, and 13.33mm/150ppm. These were compared with that of standards chloramphenicol (25.7mm/300ppm) and DMSO (0.00mm/300ppm). **Conclusion:** The ethanol extract of Jernang Resin exhibited antibacterial effects on *Salmonella typhi* and *Streptococcus mutans*, but these effects were less than chloramphenicol. The antibacterial effect increased with an increase in the concentration of the extract.

KEYWORDS: Antibacterial, jernang resin, salmonella typhi, streptococcus mutans

ID 163. Internet Addiction and Its Association with Academic Performance and Sleep Quality among Pharmacy Undergraduates

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Introduction: In the era of rapid technology development, internet plays a vital role in the daily lives to the population especially to the students who may use internet for education purpose. However, they might be subjected to internet addiction depending on how one handling its usage. **Objectives:** This study aimed to investigate how common internet addiction among pharmacy undergraduates and its association with academic performance and sleep quality. **Materials and Methods:** This cross-sectional survey was conducted among 116 International Islamic University Malaysia (IIUM) pharmacy undergraduate students from second year to fourth year. Assessment tools used were Internet Addiction Test (IAT) and Pittsburgh Sleep Quality Assessment (PSQI) questionnaires. Data were analysed using SPSS version 21 for descriptive statistic and Spearman correlation. **Results:** Majority (64.7%) lies within moderate internet addicts, while 21.6% of them were classified as mild internet addicts, 11.2% were severe internet addicts and 2.6% were categorised as none internet addicts. Most of them surf internet for academic, entertainment and social media purposes. The Internet Addiction Scale shows an insignificant relationship with academic performance ($r=0.211$, $p=0.023$) and sleep quality ($r=0.16$, $p=0.087$). Thus, poor academic

performance and poor sleep quality are not attributed due to internet addicts. **Conclusion:** Moderate internet addiction is a relatively frequent phenomenon among IIUM pharmacy undergraduate students. However, since it is a cross sectional study, it does not aid in determining cause and effect. Therefore, more institutions in Malaysia are suggested to conduct similar study for the purpose of comparison.

KEYWORDS: *Academic performance, internet addiction, pharmacy students, sleep quality, undergraduates*

ID 164. Evaluation of Clopidogrel Utilisation in Primary Care

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Introduction: In Malaysia, tertiary hospital discharge stable cardiovascular disease (CVD) patients with clopidogrel to primary health clinics for continuation of care. In our setting, there is a lack of information transfer on clopidogrel use as CVD secondary prevention which causes a delay in evaluating its appropriate continuation and potentially unjustified medication expenses. **Objectives:** To evaluate the appropriateness of clopidogrel utilisation among discharged patients in primary care and to estimate potential cost avoidance due to inappropriate treatment. **Materials and Methods:** This was a retrospective, observational study conducted at 8 public health clinics. All patients with at least a month supply of clopidogrel from January 2016 to December 2017 were recruited. Those who were dormant for 6 months or with untraceable discharge letter were excluded. Patients were categorised into appropriate and inappropriate groups based on indication and duration of clopidogrel treatment as stipulated in Malaysia Clinical Practice Guidelines on Primary & Secondary Prevention of CVD 2017. Data was analysed using descriptive statistics. **Results:** A total of 316 patients were included. The average clopidogrel treatment duration was 12 ± 9 months (1,40). Clopidogrel use was found appropriate in 57.0% (n=180) of the patients. In contrary, 52.2% (n=71) patients inappropriately continued clopidogrel and aspirin dual therapy while 47.8% (n=65) continued clopidogrel monotherapy, for more than 12 months which incurred avoidable cost of RM 63,874. **Conclusion:** Almost half of clopidogrel utilisation was inappropriate. Therefore, there is a need to establish an effective review procedure and effective information transfer between healthcare facilities, involving prescribers and pharmacists to optimise patient care and medication expenses.

KEYWORDS: *Appropriate, clopidogrel, primary care, utilisation review*

ID 166. Dietary Habits among Egyptian University Students

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Introduction: Eating while in college is such a struggle because students are usually on the go, busy and sometimes financially restricted and far from home. Accordingly, students may have to eat junk foods high in fats and sugars, which are playing a major role in multiple diseases. **Objectives:** Our goals were to estimate the prevalence and to explore patterns of unhealthy dietary habits among university students in Egypt during the academic year 2018/19. **Materials and Methods:** The study sample comprised 421 university students, ages 18 to 25, with online access who agreed to participate in an online survey. We used 26 items validated semi-structured questionnaire for data collection. We asked the participants about their demographic characteristics as well as their dietary and lifestyle habits. We also include a separate section in the survey to assess the student's general nutrition knowledge. **Results:** The majority of respondents (93%) reported that they have an eating habit problem, and the most crucial reason was irregular meals (71%). A significant percentage of participants (96.7%) reported that they have to eat a meal of fast food at least once a week. We also find high levels of energy-dense and low nutritive value food consumption such as biscuits, chips and noodles. Unexpectedly (43.5 %) of students did not know about healthy nutrition, and surprisingly, social media was the most frequently used source for nutrition information. **Conclusion:** This study highlights the importance of students nutrition education on healthier dietary habits as well as better fast-food options.

KEYWORDS: *Eating, fast food, habits, lifestyle, nutrition, Survey, unhealthy diet*

ID 168. A Multi-Centre Point Prevalence Survey on Antibiotic Use in Hospitals in Punjab, Pakistan

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Introduction: Irrational use of antibiotics is one of the precipitating factors in the development of antimicrobial resistance, the biggest challenge of 21st century. In this era of big data, it is imperative to estimate the use of antibiotics to inform the relevant stakeholders to adopt a proactive approach to reduce the magnitude of the threat of antibiotic resistance. **Objectives:** To evaluate the use of antibiotics to inform the stakeholders the need of antibiotic stewardship policies. **Materials and Methods:** A standardized and validated global point prevalence survey tool was used to appraise the use of antibiotics in 29 different hospitals for all inpatients in Gynaecology, Gastroenterology, Neurology, Medicine, Surgery, Orthopaedic and Paediatric wards on the day and time of survey. All other wards were excluded (short stay, dialysis and emergency patients). All the statistical operations were performed using SPSS. **Results:** A total of (n= 1912) patients were recruited in the study. The top three most commonly prescribed antibiotics were ceftriaxone (58.6%), metronidazole (25%) and moxifloxacin (9.2%), while, the top most reported indication for antibiotics use was: medical prophylaxis (74.5%). Highest use of antibiotics was noted in Medicine ward (38.2%). **Conclusion:** The study highlighted significant high use of antibiotics especially in prophylaxis and in Medicine wards in hospitals of Punjab. This study should be taken as a red flag for Ministry of Health, Pakistan to promulgate and implement stringent policies for effective stewardship of antibiotics use in Pakistan, otherwise, no action today, there would be no cure tomorrow.

KEYWORDS: Antibiotic resistance, antimicrobial resistance, antibiotic irrational use, point prevalence survey, pakistan

ID 169. The Impact of Rising Drug Prices in Egypt

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Introduction: Over the past two years, prices of almost all imported and locally-manufactured drugs in Egypt were dramatically increased. While most patients complain about the price rise because they will bear more financial loads, the government and big pharma said that the increase in prices was inevitable to combat the problem of drug shortage. **Objectives:** The purpose of this study is to explore the Egyptian customer's attitude towards the rising prices of most drugs and cosmetics. Also, to evaluate the impact of continued price increases on the availability of the essential drugs. **Materials and Methods:** Between May and July 2019, we administered a cross-sectional anonymous internet-based survey to a convenience sample of Egyptian adults. **Results:** The

study sample included 141 participants who completed the questionnaire. About 60% of the respondents are not covered by health insurance. Only 21.3% of respondents reported that they could afford the higher drug prices. A substantial percentage (42.3%) reported that they usually have to ask the pharmacist about cheaper alternatives. Furthermore, 38.7% of respondents stated that they were compelled to use non-drug therapies for their diseases. About half of respondents specified that it is still hard to find all the essential drugs despite the increased prices. Surprisingly, over three-quarters of the participants admitted that they have to buy one strip or a few tablets instead of the whole drug package. **Conclusion:** The study findings confirm that the increase in drug prices is negatively affecting the Egyptian community, especially in the absence of full health insurance coverage.

KEYWORDS: Drug prices, drug purchase, drug shortage, egyptian drug market, medicines, pharmacies, pharmacy

ID 170. Healthcare Professional Attitude and Social Support: How Do They Affect Self-esteem of Physical Disabled People?

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Introduction: Attitude of healthcare professionals and social supports give big influence towards self-esteem of physically disabled people. **Objectives:** To explore how impairments could affect the self-esteem of physically disabled people and how healthcare professional and social support boost their self-esteem. **Materials and Methods:** Study was conducted qualitatively whereby face-to-face interviews were conducted among 10 participants with physical disabilities. Participants were recruited from 2 rehabilitation centres in Kuantan namely, Community-based rehabilitation and rehabilitation, occupational therapy and physiotherapy of HTAA Kuantan. Interviews were conducted using the developed interview guide that explored on the disabled peoples' self-esteem and motivation, feelings towards attitude of the healthcare professionals, and satisfaction towards physical, services and social support from the healthcare professionals. Thematic analysis was done to identify the themes emerged from the interview transcripts. **Results:** There were 5 males and 5 females with age ranged from 31 to 58 years old interviewed. Five are still working or studying post impairments. Participants claimed being low self-esteem resulted from negative perception from the society, issue of rejection, being discriminated, and difficult in getting support from the society. Most of the participants asserted that they gained their motivation and self-esteem due to the continuous

support from various groups, such as their spouses, family members, colleagues, employers, and healthcare professionals. **Conclusion:** Despite of the heavy workload and stressful working environment, positive attitude showed among the healthcare professionals is highly praised. Hence, this will indirectly able to improve the self-esteem, motivation, and rehabilitation progress of physically disabled people.

KEYWORDS: *Healthcare professional, physical disabled people, social support, self-esteem*

ID 171. Co-mediations and Co-morbidities with Benzodiazepine Prescriptions: Findings from Malaysia Tertiary Hospital Setting

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Introduction: Patients receiving benzodiazepine are commonly associated with co-morbidities and multiple uses of co-mediations. It is important to know what are the common medications and diseases to better understand current practice at outpatient tertiary hospital setting in Malaysia. **Objectives:** This study examined the types of co-mediations prescribed among benzodiazepine users. Comorbidities among the benzodiazepine users were also determined. **Materials and Methods:** This retrospective, cross-sectional study was conducted at the outpatient pharmacy of tertiary hospital setting in Malaysia. Benzodiazepine prescriptions that were co-prescribed with other medications from January 2014 to December 2016 were identified. The statistical package Stata, v.13.0 (Stata Corp LP) was used for data analysis to calculate the number of patients, number of co-mediations with co-morbidities. **Results:** About 42.4% (n=3,469) antidepressant were prescribed with BZD, followed by 29.6% (n=2,423) antipsychotic and 11.56% (n=945) antiparkinson as a concurrent medication with benzodiazepines. The co-prescription of antiepilepsy and analgesic accounted for 9.55% and 0.35%, respectively. There were 90.4% (n=5,176) co-morbid with at least one psychiatric disorder. Mood disorder represents 31.6% (n=1,809) of the comorbidities in this study, making them the highest comorbidity next to psychotic disorder (27.6%), and anxiety disorder (23.6%). **Conclusion:** Prescription of benzodiazepines in the present study could be due to associated anxiety, insomnia, and agitation in psychotic and depressed patients, which are common indications for benzodiazepines prescribing. There is also a chance

that benzodiazepines were prescribed because of the anticipated worsening of anxiety, which is forecasted to be seen with some of the Selective Serotonin Reuptake Inhibitors (SSRIs).

KEYWORDS: *Benzodiazepine, co-mediations, co-morbidities, Malaysia, prescription*

ID 172. Engineering Hepatitis B Virus Core Particles for In vivo Nuclear Imaging to Localise HER-2 Expressing Tumours

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Introduction: HbC particles have potential as drug delivery vehicles for cancer therapy. They are hollow nano-particles of 30–34 nm diameter and 7 nm thick envelopes, consisting of 180–240 units of 21 kDa core monomers. They possess the capacity to assemble/disassemble in a controlled manner, allowing encapsidation of various drugs and other biomolecules. Furthermore, other functional motifs, like receptor binding sequences, can be expressed. **Objectives:** This study focuses on the development of genetically modified HbC particles for *in vivo* nuclear imaging to specifically target HER-2-expressing tumours, for future cancer diagnosis and therapy. **Materials and Methods:** The non-specific binding capacity of wild type HbC particles was reduced by genetic deletion of the sequence encoding arginine-rich domains. Z_{HER-2} affibodies were expressed on the HbC particles surface to achieve a specific HER-2-targeting. HIS-tag was introduced at the N-terminal of HbC monomers to allow the radiolabelling of HbC particles with ^{99m}Tc. SPECT/CT imaging and quantitative gamma counting were performed to characterise the organ biodistribution profile of the HER-2 specific-targeting HbC particles in tumour-bearing mice. **Results:** 97.2% and 98.0% radiolabelling efficiency was achieved for ΔHbC and Z_{HER-2}-ΔHbC particles, respectively. ^{99m}Tc-ΔHbC and ^{99m}Tc-Z_{HER-2}-ΔHbC was purified from free [^{99m}Tc(CO)₃]⁺ and exhibited 100% radiolabelling efficiency. Both types of HbC particles exhibited 100% stability in serum and

PBS. *In vivo* studies confirmed positive uptake of Z_{HER-2} - Δ HbC particles in HER-2-expressing tumours, compared to non-targeted Δ HbC particles in intraperitoneal tumour-bearing mice models. **Conclusion:** The present results highlight the potential of these nanocarriers in targeting HER-2-positive metastatic abdominal cancer following intra-peritoneal administration.

KEYWORDS: *99mTc, affibody, HER-2, hepatitis B virus core particles, nuclear imaging*

ID 173. Validity of Zero-Crossing Method for Determination of Phenylbutazone and Paracetamol Using Derivative Spectrophotometry in Jamu

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Introduction: Active pharmaceutical ingredients phenylbutazone (PBZ) and paracetamol (PCM) are still often found in adulterated *jamu* products. The chromatographic method which is used to determine both are considered less efficient and it needs two or more solvents in the extraction or elution step. It is necessary to develop and validate a simple derivative spectrophotometry zero-crossing method. **Objectives:** This study aims to determine the validity of the zero-crossing method for the analysis of a mixture of PBZ and PCM simultaneously in *jamu*. **Materials and Methods:** Spiked-sample were made using *jamu* which was added by a mixture of amount PBZ and PCM, then dissolved using 0.1 N NaOH. Spiked-samples were scanned at wavelengths 200–300 nm. **Results:** The results showed the zero-crossing wavelength of spectrum PBZ and PCM in spiked-*jamu* were 227.2 nm and 257.1 nm respectively on the first-order derivatization. The specificity of the method is shown by comparing the absorbance of the spiked-*jamu* at the zero-crossing wavelength were 0.009 and 0.015 for every single spiked-PBZ and PCM, while in the mixture were 0.009 and 0.016. Linearity test in the range of 12–20 ppm showed a correlation (*r*) were 0.991 and 0.987; LoD were 1.46 and 1.73 ppm; LoQ were 4.86 and 5.76 ppm for each PBZ and PCM; accuracy test with the value of % recovery in the range of 96.15%-103.17%; precision test with relative standard deviation value of 0.11%-1.29%. **Conclusion:** These results indicate that the zero-crossing method is valid to simultaneously determine the presence of paracetamol and phenylbutazone in adulterated *jamu* product.

KEYWORDS: *Jamu, phenylbutazone, paracetamol, zero-crossing method*

ID 174. Drug Utilization Pattern in Military Field Hospital during Kelantan's Flood: A Retrospective Study

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Introduction: In 2014, a massive flood occurred at Manek Urai in the state of Kelantan, Malaysia, which brought down public infrastructures, electricity, clean water supply, and medical facilities. Malaysian Armed Forces were given the task to rescue flood victims and operate a level II military field hospital. The mission provided a quandary on how much drugs were supposed to be brought adequately for the operation. Replenishing drugs and inventory stocks might pose an obstacle due to the breakdown of communication and public infrastructures. **Objectives:** The purpose of this study was to determine the drug utilization pattern during a flood season at a military field hospital in the state of Kelantan. **Materials and Methods:** The researchers obtained the drug utilization pattern retrospectively from prescriptions that had been issued during the military field hospital operation in 2014. Relevant information was collected, such as patients' demographics, diagnoses, and drug types and quantity. The data was analysed descriptively using Microsoft Excel 2010 and SPSS version 24. **Results:** 2771 prescriptions have been analysed with an average of 103 prescriptions per day. The majority of patients displayed diseases related to the respiratory system (*n*=1245, 44.9%); skin problem (*n*=418, 15.1%); and the digestive system (*n*=321, 11.6%). A total of 8082 drugs was prescribed during the mission, with an average drug(s)-per-encounter of 2.92. The top three utilised drugs were paracetamol (*n*=1239, 15.3%), chlorpheniramine (*n*=994, 12.3%), and diphenhydramine (*n*=962, 11.9%). **Conclusion:** The results of this study attempted to highlight the types and quantity of the drugs needed in humanitarian aid and disaster relief, specifically, with regard to flood victims.

KEYWORDS: *Field hospital, flood, kelantan, military pharmacy*

ID 175. Medication Adherence Assessment among Patients with Type 2 Diabetes Mellitus Treated Polytherapy in Indonesian Community Health Center

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Introduction: Type 2 diabetes mellitus (T2DM) is a chronic disease where most of the patients usually need polytherapy. This could affect their medication adherence (MA). However, other complex factors may also associate with MA which is important to identify. **Objectives:** The

purpose of this study was to evaluate the MA of patients with T2DM who received polytherapy and identify other factors that can affect the MA. **Material and Methods:** This was a cross-sectional study with HbA1C represent their MA level. Uncontrolled blood glucose with HbA1C of >7 is indicated to have low MA. All characteristics were collected to identify factors that potentially associated with low MA. SPSS version 24 was applied in this study using Chi-Square as univariate analysis to analyze factors that potentially associate with low MA. Multiple logistic regression analysis was performed in the factors appeared to be statistically significant to find their relationship with low MA. **Results:** The study obtained 70 patients with a female dominance (67.1%) and mean+SD age of 58.11 ± 9.17 years. 72.85% of the patients had low MA (HbA1C >7). Univariate analysis found that duration of T2DM significantly ($P = 0.007$) related to MA where patients with T2DM of < 5 years tended to have low MA. Logistic regression showed that patient with T2DM < 5 years ($P 0.015$; OR 6.982; 95% CI 1.459 to 33.411) associated with low MA. **Conclusion:** Patient with the duration of T2DM less than 5 years surprisingly was susceptible to have low MA. Low MA was not affected by polytherapy.

KEYWORDS: Medication adherence, polytherapy, type 2 diabetes Mellitus

ID 176. Effect of Different Drying Treatments and Different Extraction Methods on Alpha-Glucosidase Inhibitory Activities of *S. Zalacca* Fruit

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Introduction: *Salacca zalacca* (Gaertn Voss), commonly known as snake fruit and belongs to the *Arecaceae* family and natives of Southeast Asia. This fruit is edible and have certain medicinal values. **Objectives:** The aim of this study was to compare the α -glucosidase inhibitory activities of different drying and extraction methods. **Material and methods:** Flesh of this fruit was subjected to two different drying methods namely; oven dried (OD) and freeze dried (FD) and extracts were prepared using soxhlet (SX), sonication (SC) and maceration (MC) techniques. The α -glucosidase inhibitory activity of extracts were evaluated using α -glucosidase enzyme. **Results:** The *S. zalacca* fruit extracts obtained through SC and MC demonstrated better α -glucosidase inhibitory activity as compared to SX method, specifically, the FD extracts showed higher activity compared to the OD extracts. Analysis of α -glucosidase inhibitory activity of the OD *S. zalacca* fruit extract indicates that extract obtained through SC method possesses significantly higher activity (IC₅₀ 79.42 μ g/mL) than that of SX extracted sample which displayed IC₅₀

at 125.73 μ g/mL. Considering the effects of both methods (drying and extraction) on the α -glucosidase inhibitory activity of *S. zalacca* fruit extracts, extract obtained through SC of the FD fruits demonstrated the highest activity (IC₅₀ 19.40 μ g/mL) Meanwhile, extracts obtained via OD and different extraction methods such as SX, MC and SC showed the least inhibition with IC₅₀ 125.73, 87.23 and 79.42 μ g/mL, respectively. **Conclusion:** This study suggests that *S. zalacca* fruit has the potential for nutraceutical enhancement and as ingredient in medicinal preparation.

ID 177. Antihyperglycaemic Property of the Stem of *Bauhinia aculeata* L. in Diabetic-induced Zebrafish

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Introduction: *Bauhinia aculeata* contains phytoconstituents having antidiabetic property. However, there is no report yet of antihyperglycaemic activity of *B. aculeata*. Therefore, a preliminary study to investigate the potential of *B. aculeata* in lowering blood glucose level was conducted. **Objectives:** To evaluate the ability of the ethanol extract of the stem of *B. aculeata* in reducing blood glucose level in diabetic induced zebrafish. **Materials and Methods:** The extract of *B. aculeata* was obtained by maceration using ethanol 96%. The antihyperglycaemic evaluation was carried out by inducing the zebrafish with alloxan followed by soaking in 2% of glucose solution for 24 hours up to seven days. Positive control was given metformin 25 mg/2L and treatment group was given the extracts of *B. aculeata* 100 mg/2L and 200 mg/2L. Zebrafish was fasted for 24 hours before blood collection. The specimens were collected by head excision on day eight and was measured using glucometer (Autocheck®). The data was analyzed by Mann-Whitney U Test using SPSS v20.0 for Windows®. **Results:** The ethanol extracts of *B. aculeata* 100 mg/2L and 200 mg/2L were able to decrease the fasting blood glucose level of zebrafish to 84.5 ± 12.92 mg/dL and to 109.4 ± 47.65 mg/dL, respectively. Statistical analysis showed that both extracts could decrease fasting blood glucose level in zebrafish significantly ($p < 0.05$). The ability of extract 100 mg/2L was comparable to metformin 25 mg/2L (77.5 ± 11.787 mg/dL). **Conclusion:** The ethanol extract of the stem of *B. aculeata* showed antihyperglycaemic activity to diabetic induced zebrafish.

KEYWORDS: Alloxan, *Bauhinia aculeata*, blood glucose level, zebrafish

ID 178. The Effectiveness of Inabah Programme among Malaysian Drug Addicts in Recovery

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Introduction: Addictive disorders are a group of disorders that can cause physical and psychological deterioration. Receiving psychosocial treatment is essential for breaking the cycle of addiction. Inabah programme is an Islamic psychosocial approach used to rehabilitate drug addicts. **Objectives:** Our study attempts to investigate the clinical and psychosocial outcomes among participants of Inabah programme in Peninsular Malaysia. **Materials and Methods:** This was an exploratory, prospective pre- and post-study utilized convenience sampling. Health, drug use pattern and psychosocial profiles were measured using the Opiate Treatment Index (OTI). Higher scores signified greater degree of dysfunction. Withdrawal and craving level were assessed using the Withdrawal Symptoms List and Brief Substance Craving Scale respectively. Higher scores denoted higher withdrawal frequency and more craving. Descriptive and non-parametric tests were applied. **Results:** A total of 144 muslim male participants were recruited during pre-intervention (onset age of addiction = 19.6 ± 5.8 ; poly-drug user = 55.3%; intervention period ≤ 2 months = 63.0%; no imprisonment history = 75.7%; amphetamine-type stimulants abusers = 57.0%). Only 115 participants completed the post-intervention phase (drop-out = 29). Findings revealed that there were significant improvements in *Withdrawal Level* ($d = 0.85$; $p < 0.001$), *Drug Use* ($d = 0.39$; $p < 0.001$), *Psychological Adjustment* ($d = 0.35$; $p = 0.001$) and *Craving Level* ($d = 0.24$; $p < 0.001$). **Conclusion:** Ultimately, our study provides the effectiveness of Inabah programme as an Islamic psycho-spiritual therapy for Malaysian drug addicts.

KEYWORDS: Clinical health, drug addicts, inabah programme, psychosocial

ID 179. A Qualitative Study on Important Aspects and Application of Patient-centred Care in Medication Therapy Adherence Clinic (MTAC) among Pharmacists and Patients in Public Hospitals

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Introduction: Patient-centred care (PCC) focuses on providing care that is respectful to patients' needs and

values, and can improve patient engagement and the therapeutic relationship. Pharmacists need to apply PCC aspects in their routine interactions with patients. However, in Malaysia, there is a paucity of studies on the application of PCC in patient-pharmacist consultations. **Objectives:** i) To explore views of medication therapy adherence clinic (MTAC) pharmacists and patients on important aspects of PCC. ii) To identify factors that can affect the application of PCC to improve patient active engagement in MTAC. **Materials and Methods:** Semi-structured interview were conducted with 18 public hospital pharmacists and 17 patients. Interviews focused on perceptions on important aspects of PCC and barriers and facilitators to its practicality in routine consultations. Each interview was audiotaped and transcribed verbatim. Then, thematic analysis with a constant comparative method was employed to analyse the data. **Results:** Several themes on important aspects of PCC emerged, including having mutual understanding, recognizing patient individuality, tailored information, two-way communication and treatment decision-making roles. Furthermore, insights on factors that can affect the application of PCC in MTAC consultations were identified. They were grouped into (i) patient-related factors (i.e. mindset, knowledge, socioeconomic support), (ii) pharmacist-related factors (i.e. communication skills, personalities), and (iii) healthcare institution factors (i.e. resources, continuity of care, and interprofessional collaboration). **Conclusion:** Perceptions of core aspects and factors of PCC should be given full consideration for a successful implementation in the Malaysian healthcare context.

KEYWORDS: Chronic diseases, MTAC, partnership, patient-centred care, qualitative research

ID 180. Fabrication, Characterisation and In vitro Study of Dual-loaded Irinotecan/cisplatin Liposomes

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Introduction: The biocompatibility and modular nature of liposomal nanoparticles have been useful in producing various drug-loaded derivatives with desirable characteristics. Utilisation of such liposomal carrier is very promising in terms of delivering tailored dose of combination chemotherapy agents for lung cancer therapy. **Objectives:** To produce, characterise and purify stable, irinotecan/cisplatin-loaded liposomes using microfluidic technique followed by studying their cytotoxicity *in vitro*. **Materials and Method:** Drug-loaded liposomal formulations with varying molar ratio of 1,2-Distearoyl-sn-glycero-3-phosphocholine,

1,2-Dipalmitoyl-sn-glycero-3-phosphocholine, 1,2-Distearoyl-sn-glycero-3-phospho-rac-(1-glycerol) and cholesterol were fabricated using microfluidic technique with staggered herringbone mixer at total flow rate of 12ml min⁻¹ and aqueous-to-lipid flow rate ratio of 3:1. Fabricated liposomal formulations were then characterised in terms of size, PDI and stability over 28 days, purified using filter centrifugation and tangential flow filtration methods and subjected to *in vitro* assay against A549 cells. **Results:** Several formulations yielded stable drug-loaded liposomes with size of 70 – 120nm and PDI of 0.002 – 0.2. Tangential flow filtration method was found to be faster (105 mins) and effective in concentrating liposomal suspension (factor of 20) in comparison with filter centrifugation (240 mins and factor of 8 respectively). The formulations demonstrated significantly higher cytotoxicity of up to 83-fold against A549 cancer cells in comparison with their free drug counterparts. **Conclusion:** The results of this study demonstrated the feasibility and modularity of dual-loaded irinotecan/cisplatin in a liposomal system and also its higher efficacy against A549 cancer cells, paving the way for the use of this liposomal system for lung cancer therapy.

KEYWORDS: *In vitro*, liposome, microfluidic, purification, staggered herringbone mixer

ID 182. Molecular Docking Simulation of Natural-derived Flavonoids with Anti-apoptotic Bcl-2 and Bcl-xL Proteins towards Ovarian Cancer Treatment

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Introduction: The natural-derived flavonoids are well-known to have anti-carcinogenic effects. This could be an alternative strategy of ovarian cancer treatment, due to existing platinum-based drugs are reported to develop resistance with low survival rates. Inhibition of anti-apoptotic (Bcl-2 and Bcl-xL) proteins is the key target to induce apoptosis process in cancer cells. **Objectives:** This study aims to determine the docking interaction of five natural-derived flavonoids (biochanin A, myricetin, apigenin, galangin and fisetin) with potential anti-apoptotic target proteins (Bcl-2 and Bcl-xL). **Materials and Methods:** The molecular docking simulation was conducted by using AutoDock Vina program. Affinity binding and the presence of hydrogen bonds were calculated using AutoDock Tools (ADT) version 1.5.6. **Results:** Our findings showed that the interaction of all flavonoids with Bcl-xL exhibited better binding affinity

as compared to Bcl-2 proteins. The highest binding affinity was recorded in fisetin (-8.8 kcal/mol) for Bcl-xL protein. Meanwhile, other flavonoids docked with Bcl-xL protein exhibited binding energies, ranging from - 8.0 to - 8.6 kcal/mol. The presences of four hydrogen bonds were detected in fisetin, resulting strong bindings with Bcl-xL. **Conclusion:** The present results indicate that all flavonoids could be potentially targeted Bcl-xL protein as an inhibitor, which could lead to apoptotic process in ovarian cancer.

KEYWORDS: *Anti-apoptotic proteins, docking, flavonoid, ovarian cancer*

ID 183. Clinical Outcomes and Quality of Life of Patients with Short-term and Long-term Opioid Therapy for the Treatment of Non-cancer Pain

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Introduction: Data from the US showed that there are increasing evidences of opioid-related harms such as opioid overdose deaths in long term opioid use for the treatment of chronic non-cancer pain. There is lack of data from Malaysia on opioid use particularly on its opioid related clinical outcomes. **Objectives:** To examine the clinical outcomes and quality of life of short-term and long-term opioid use in patients with non-cancer pain. **Materials and Methods:** This was a prospective clinical study where patients (aged ≥18 years old) with non-cancer pain currently treated with opioids were recruited from three pain clinics in Malaysia. Patients were stratified into short-term or long-term opioid users based on opioid use ≥ 90 days. Outcome measures included pain intensity and pain interference with daily activities assessed by Brief Pain Inventory-Short Form, health-related quality of life assessed by Short-Form 36v2 and pain medication profiles assessed by Medication Quantification Scale-III (MQS-III). These measures were compared between short- and long-term opioid users. **Results:** Of the 61 non-cancer pain patients recruited, 49.2% (n=30/61) were short-term and 50.8%(n=31/61) were long-term opioid users. There were no statistically significant differences in the pain intensity, overall pain interference, health-related quality of life, and pain medication profiles between short-term and long-term opioid users in this study. **Conclusion:** Long-term opioid use did not significantly improve the clinical outcomes of patients with non-cancer pain which further supports the evidence of lack of benefits of opioids therapy in this condition.

KEYWORDS: *Clinical outcomes, non-cancer pain, opioids, short*

ID 184. Evaluation of Deliberate Self-poisoning Cases amongst Adults Involving Psychiatric Agents Based on Poisoning Exposure Calls Received by the Malaysian National Poison Centre (2008–2017): A Retrospective Review

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Introduction: Deliberate self-poisoning (DSP) is a grave health concern, largely contributing to some of the 60% of deaths in Asia. **Objectives:** This study evaluates DSP cases amongst adults involving psychiatric agents based on poisoning exposure calls reported to this centre. **Materials and Methods:** Intentional poisoning exposure cases amongst adults aged 20 to 74 year olds from 2008 to 2017 were retrospectively reviewed. This adult group was further categorized to young adults (20–35 years old), middle-aged adults (36–55 years old), and older adults (56–74 years old). **Results:** 18,284 intentional poisoning cases were accounted for in adults. Exposure in females (61.9%) doubled those in males (31.3%). The highest recorded cases being the Malays (26.3%) and Indians (26.2%). A majority of exposures involve acute poisoning (84.9%) via ingestion (99.9%), with suicidal intent (67.7%). The largest implicated poisoning agent was pharmaceutical products (40.2%), mostly involving psychiatric agents (31.8%) and analgesics (16.2%). Psychiatric agents used consist of a combination of psychiatric agents (23.8%), benzodiazepines (21.9%) and a combination of psychiatric agents with other poisoning agents (20.2%). Approximately half of DSP cases associated with psychiatric agents were performed by young adults (46.8%). **Conclusion:** Results show an alarming growth of psychological distress among the younger female generation engaged in self-harm. Preventive measures must be undertaken to tackle foreseeable incidences from rising.

KEYWORDS: *Adults, deliberate self-poisoning (DSP), psychiatric agents*

ID 185. Public Speaking Anxiety among Egyptian University Students

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Introduction: Public speaking is a crucial skill for university students. However, it is considered a nightmare for a large percentage of them. **Objectives:** This study

aimed at exploring the prevalence and pattern of public speaking anxiety (PSA) in a convenience sample of Egyptian university students besides highlighting some ways to minimise this fear. **Materials and Methods:** Data collection was by the anonymous cross-sectional survey. The target sample was 400 students from different Egyptian faculties. We distributed the questionnaires online, and the student's participation was voluntary. **Results:** A total of 351 students (88%) responded. A significant percentage of students (78.8%) reported that they suffer from PSA. Surprisingly, about 26% of respondents admitted that they could experience extreme fear (public speaking phobia). The prevalence of PSA among female students was higher than that of males. Interestingly, only 5% of students prefer to make the presentations in pure English language. A large percentage (70%) of students reported that speaking skills are essential for the study and work life. **Conclusion:** The study findings confirm the high prevalence of public speaking anxiety. The study sheds the lights on some ways to overcome PSA such as training, good preparation and practising.

KEYWORDS: *Fear, public speaking, presentation skills, social anxiety, Stress*

ID 186. Optimization of Zerumbone-loaded Oleic Acid-chitosan Nanoparticles Formulation using Simplex Lattice Design

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Introduction: Zerumbone is a phytochemical compound derived from *Zingiber Zerumbet* (L.) Smith rhizome that has a potential of anticancer. Previous study showed the nanoencapsulation of zerumbone in the oleic acid-modified chitosan increased the entrapment efficiency of the active compound. **Objectives:** The aim of this study was to optimize the preparation of zerumbone-loaded oleic acid-chitosan nanoparticles formed by ionic gelation method. **Material and Methods:** Zerumbone nanoparticles was prepared in eight formulas by ionic gelation method, using sodium tripolyphosphate as crosslinker agent. The optimization was conducted using an experimental design (Simplex Lattice) to study the effect of two variables, oleic acid-chitosan concentration (0.04–0.1%), and zerumbone concentration (0.005–0.02%) on the average particle sizes, polydispersity index, percentage of transmittance, and entrapment efficiency of the nanoparticles. The physical characteristics of nanoparticles was evaluated using particle size analyzer and UV-Vis spectrophotometer, whereas the zerumbone

concentration was determined using HPLC. **Results:** The results showed that zerumbone nanoencapsulation of the eight formulas had a range of sizes of 126.33 to 202.13 nm, the polydispersity index of 0.440–0.563 μm ; the transmittance of 94.4–95.8%, and the encapsulation efficiency of 18.66–89.55%. **Conclusion:** The optimized formulation was found with the desirability of 0.881, with the ratio of oleic acid-chitosan to zerumbone was close to F1 (2:1). The verified and the predicted responses of the optimum formulation displayed good compromise ($p > 0.05$). The optimized formulation has a potential for delivery of zerumbone as anticancer.

KEYWORDS: Chitosan, nanoparticles, optimization, simplex lattice, zerumbone

ID 187. Frequency and Utilization of Academic Performance Boosters among University Students

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Introduction: Academic performance boosters are substances or supplements that are claimed to improve alertness. In the high-pressure race of academic achievement, college students have been abusing boosters for decades. **Objectives:** We aimed at exploring the prevalence, the pattern of use and side effects for academic performance enhancers among university students, specifically caffeine-containing beverages, painkillers and nootropic drugs. We also investigated the relationship between consumption of academic boosters and the students' academic grades. **Materials and Methods:** From May to July 2019, seven hundred students from different Egyptian universities were invited to complete an online survey. Only 608 students responded. **Results:** The caffeine-containing beverages consumed by students were coffee (70%), tea (60.8%), carbonated beverages (28.7%), chocolate drinks (19%) and energy drinks (3.2%). The majority of respondents (63.6%) reported that they are not aware of the caffeine content in their favourite beverages. The results also reveal weak positive correlation between tea, coffee, energy drinks consumption and students' academic grades ($r = 0.43$; p -value 0.02), ($r = 0.50$; p -value 0.01) and ($r = 0.66$; p -value 0.03) respectively. Commonly reported side effects of caffeine-containing beverages were insomnia (39.4%) and headache (29.3%). Overall, about 9% of responders admitted to misusing painkillers to reduce fatigue and exhaustion. One hundred forty-one (23%) students reported using vitamins and herbal nootropic drugs. **Conclusion:** These findings highlight the need for increasing awareness among young adults regarding the risks of high doses of caffeine consumption.

More research is needed for better understanding of the irrational use of painkillers and vitamins.

KEYWORDS: Academic doping, academic enhancers, caffeine, energy drinks, performance enhancers, smart drugs

ID 188. Cognitive Control Predictors of Mental Health Status among Inabah Inmates Undergoing an Islamic Psycho-spiritual Therapy

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Introduction: Drug addiction is a complex disease as it involves physical, psychological and social aspects of an individual's life. A psycho-spiritual rehabilitative therapy, like Inabah programme, provides the comprehensive components for successful drug addiction treatment. **Objectives:** To predict the anxiety and depression level based on withdrawal symptoms and craving level among drug addicts undergoing Inabah programme in Terengganu, Kelantan and Kedah for both phases, pre-and post-ntervention. **Materials and Methods:** All included participants had to be ≥ 18 years, newly-registered participants at three Inabah centres and also cognitively capable of completing the questionnaires. Convenience sampling was employed in this prospective pre- and post-study. Clinical symptoms were assessed using Withdrawal Symptoms List and Brief Substance Craving Scale while the mental health outcomes were measured via Hospital Anxiety Disorder Scale (HADS). Descriptive analysis and multiple linear regressions were applied. **Results:** Only 115 out of 144 eligible Muslim male participants completed the post-intervention phase (age = 29.3 ± 7.4 ; single = 70.4%; self-employed = 47.7%; monthly income < RM 1,500 = 78.9%). Withdrawal symptoms are the significant predictors for both anxiety [pre: $F(5, 108) = 3.648$, $p < 0.001$, $R = 0.380$; post: $F(5, 108) = 3.013$, $p = 0.014$, $R = 0.350$] and depression level [pre: $F(5, 108) = 8.622$, $p < 0.001$, $R = 0.534$; post: $F(5, 108) = 8.651$, $p < 0.001$, $R = 0.535$] among participants. **Conclusion:** Mental health of Inabah participants were significantly affected by the withdrawal symptoms, thus Inabah assists the participants to combat those negative addiction-related problems.

KEYWORDS: Craving, drug addicts, inabah programme, mental health, withdrawal

ID 190. Characteristics of Pharmaceutical Agents Involved in Intentional Poisoning Among Adolescent: A 10-Year Review (2008–2017) of the National Poison Centre of Malaysia Data

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Introduction: Adolescents appear more liable to intentional poisoning with pharmaceuticals as their primary choice of poisoning agent for self-harm. **Objectives:** This study aimed to describe the characteristics of pharmaceutical agents involved in intentional poisoning exposure calls among adolescent received by the Malaysia National Poison Centre (NPC). **Materials and Methods:** All cases in patients aged 15–19 years old, categorized as intentional pharmaceutical ingestion between 2008 to 2017 were analysed from the Malaysia NPC poisoning enquiries database. **Results:** Poisoning among adolescent accounted for 4582 cases and 3504 (76.5%) of them were reported as intentional poisoning. Of the total intentional poisoning cases, 1555 (44.4%) involved pharmaceutical substances. Female outnumbered the male by more than 50% of the cases and Malay were the highest implicated among the races with 589 (37.9%) cases. Analgesics were the largest contributors opted by adolescents in intentional poisoning with 350 (22.5%) cases followed by cough and cold medications 217 (14%) and psychiatric medications 208 (13.4%). The most common single agent ingested was Paracetamol with 210 (13.5%) cases. The leading cause of ingestions was the suicidal intention with 1296 (83.4%) cases. **Conclusions:** Analgesics appeared to be the most common drug class with paracetamol as the highest single agent used in intentional poisoning among adolescent. These findings emphasize the needs to customised preventive strategies based on our local setting to address the issue efficiently.

KEYWORDS: *Adolescent, intentional poisoning, pharmaceutical*

ID 192. Comparison of Biosynthesis Preparation of Gold Nanoparticles between Cassava (*Manihot esculenta* Crantz) Leaf Aqueous Extract and Rutin Trihydrate

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Introduction: Gold nanoparticles (AuNPs) biosynthesis process can be developing with the natural reducing agents such as flavonoids. Cassava leaves are known to have high flavonoid content. One class of flavonol glycoside is rutin. **Objectives:** This research aimed to compare the gold nanoparticles (AuNPs) biosynthesis process using aqueous leaves extract and rutin trihydrate. **Materials and methods:** The biosynthesis of nanoparticles is a simple, single-step, eco-friendly and a green approach. The purpose of this study, to determine how the preparation and characterisation of gold nanoparticles with eco-friendly biosynthesis process using cassava leaves aqueous extract and rutin trihydrate. The gold nanoparticles (AuNPs) were characterised surface plasmon resonance by UV-Vis spectroscopy, particle size analyser (PSA), Fourier Transform Infrared (FTIR), scanning electron microscope-energy dispersive x-ray (SEM-EDS), and transmission electron microscopy (TEM) analyses. **Results:** The results of this study showed that the time of the formation of gold nanoparticles from cassava leaf extract faster than gold nanoparticles from rutin trihydrate. It had a smaller size, and morphology was uniform spherical. **Conclusion:** Biosynthesis of gold nanoparticles from cassava leaf extract had better formation than using rutin trihydrate as bioreductions.

KEYWORDS: *Cassava (*Manihot esculenta* Crantz), gold nanoparticles, rutin trihydrate*

ID 193. Outpatient Antihistamine Prescription Review of A Non-Specialized Regional Hospital in Kedah, Malaysia

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Introduction: Antihistamine is commonly used worldwide. However, misuse of antihistamine is commonly reported and has been associated with fatalities. Currently, there is limited data on antihistamine prescribing practice among outpatient departments in Malaysia. **Objective:** This study aimed to explore the antihistamine utilization pattern in outpatient department of a non-specialised regional public hospital. **Materials and method:** A three-month prescription review study was undertaken at Sik Hospital in Kedah state, Malaysia. All prescriptions which contained at least one oral antihistamine were reviewed. The information including patient demographics, diagnosis, antihistamines regimens were recorded. **Results:** Of 14,012 outpatient prescriptions reviewed, 1547 (11.0%) prescriptions contained at least one antihistamine. Majority of the antihistamine prescriptions (n=927, 59.9%) contained one antihistamine, 614 (39.7%) prescriptions contained two antihistamines, and 6 (0.4%) prescriptions contained three antihistamines. A total of 30 (1.9%) antihistamine

prescriptions were for children below 2 years-old, whereas 163 (10.5%) prescriptions were for elderly. Antihistamines were most frequently prescribed for upper respiratory tract infections (44.5%), followed by pruritus (9.6%) and unspecified allergic reaction (2.4%). A total of 2173 antihistamines were dispensed throughout the study period. The most commonly prescribed antihistamine was loratadine (41.1%), followed by diphenhydramine (35.4%) and chlorpheniramine (23.1%). A total of 34 (2.2%) prescriptions were intervened by pharmacist before dispensing, with majority of the interventions were related to dose (82.4%), followed by drug (14.7%) and frequency (2.9%). **Conclusion:** Our study reported high usage of oral antihistamines in the outpatient department and warrants further multicenter study on the clinical reasoning of antihistamine prescribing among non-specialised hospitals.

KEYWORDS: *Antihistamine, histamine H1-antagonists, hospital, malaysia, outpatient clinics*

ID 194. Altering Medication Dosage Forms in Children: Is It a Problem?

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Introduction: The limited option of appropriate medication dosage forms in children creates a challenge for prescribers to accommodate the problems. Pediatricians may decide to prescribe the medicine in altered dosage form. While there are significant observed benefit and convenience to the patients, the practice of altering medications dosage forms poses the risk of increasing the prevalence of drug therapy problems which may leads to actual and potential adverse drug events. Therefore there are ongoing concerns about the appropriateness of this practice, but studies in this area are lacking. Better understanding of the nature of the practice of altering dosage forms is needed in designing an improvement of the adverse drug events reduction initiatives. **Objectives:** This study aimed to evaluate the practice of altering dosage form in prescribing and its association with the prevalence of drug therapy problems. **Materials and Methods:** A cross sectional study was conducted including 368 pediatricians' prescriptions for children which ordered dosage forms alteration. All prescriptions received at the outpatient's pharmacies of 2 hospitals in Central Java over 30 day-period in 2017 were evaluated. Prescriptions were assessed for their drug therapy problems which include incorrect drug choice based on patient characteristics' consideration, incorrect dose calculations, inadequate consideration of dosage formulations, duplications of drugs in the pharmacological class, and drug-drug interactions. **Results:** Among 889

medications prescribed, 6.06% of medications were not supposed to be crushed. Inappropriate selections of medications' dosage regimens were identified in 42.86% of the medications out of which 305 (34.31%) of medications were in under dose and 76 (8.5%) were in overdose compared to their standard doses according to references. Of 368 prescriptions included in this analysis, 29.83% of prescriptions were deemed to have potential drug - drug interactions. Based on the level of seriousness, major potential drug-drug interactions observed in 1 prescription, moderate potential drug-drug interactions in 47 prescriptions, and minor potential drug-drug interactions in 60 prescriptions). Nine (2.45%) prescriptions were identified to have drug duplications in pharmacological class. **Conclusion:** The incidences of drug therapy problems involving dosage formulations are common. Measures are needed to reduce the observed high prevalence of drug therapy problems in prescription for children which ordered dosage form alteration. Health care providers need to improve their knowledge of dosage forms designs and their safety considerations. Improvement is also needed in medication dispensing system to protect the patients from medication adverse events in association with medications dosage forms alterations.

KEYWORDS: *Children, dosage form alteration, prescription*

ID 195. How Does Malaysian Use Electronic Cigarette? A Descriptive Analysis of The Patterns

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Introduction: Electronic cigarette is gaining its popularity among Malaysians. Thus, there is a need to assess patterns of electronic cigarette use among Malaysian adults. **Objectives:** To investigate patterns of electronic cigarette use among adults in Malaysia. Cost, side effects, quit attempt and withdrawal symptoms of electronic cigarette use were also examined. **Materials and methods:** Data were analysed from the National E-Cigarette Survey (NECS) 2016 which used a multi-stage stratified cluster sampling household survey representing all Malaysian adults aged 18 years at national and urban/rural levels. A total of 4,288 adults from all the states were involved in the study. **Results:** Mean age started to smoke electronic cigarette daily at 26.7 years and the main reason was to

experiment (47%). The majority (71.9%, 95% CI = 58.6 - 82.3) preferred third-generation devices or mechanical mods. Brands 'IPV' and fruit-based flavours with nicotine were the preferred choices. A total of RM 432.60 was spent on electronic cigarette devices with an average of RM 52.90 for e-liquid. Users mainly had a sore throat and cough while using an electronic cigarette. About 76.6% attempted quitting without any assistance with 30.1% craving for tobacco smoking. **Conclusion:** Findings suggestive that although electronic cigarette was initiated just to try, people may hook to the nicotine that presence in the e-liquid as it also contains nicotine. Therefore, more strategies required in curbing both electronic cigarette and cigarette use.

KEYWORDS: *Electronic cigarette, malaysian, patterns*

ID 196. Customers Attitudes Towards Patient Counselling in Community Pharmacies

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Introduction: Patient counselling is the process of providing drug-related information to the patients on instructions of use, unwanted effects, storing, diet and any drug therapy related information. Patient counselling is proved to positively affect the therapeutic outcomes by helping the patient to get the most benefit from their medications. Community pharmacists are key players in this process. **Objectives:** This study was designed to investigate customers' attitudes towards the process of patient counselling in the setting of community pharmacies. We also evaluated the factors that affect the patient's preferences to ask for counselling. From June to July 2019, an observational cross-sectional study was conducted through an anonymous online survey. We targeted adults who are resident in Egypt. **Results:** Only 146 participants (37% male and 63% female), ages from 18 to 60 years, completed the questionnaire. Astonishingly, more than half of the respondents (53.5%) indicated that they 'never' or 'sometimes' ask the pharmacist about health advice. A significant percentage of participants (77%) reported that pharmacists 'never' or 'sometimes' provide counselling on their own. On the other hand, 62% of respondents said that they trust pharmacists' opinion. Respondents indicated that these were the factors that influenced their preferences to ask for counselling, 72% because pharmacies are usually available nearby, 61% because counselling service is free, 53% because of short waiting time. **Conclusion:** Accordingly, it is necessary to raise public awareness about the community pharmacist's role in counselling. Moreover, pharmacists should be encouraged to do their best for ensuring safe and rational drug use.

KEYWORDS: *Community Pharmacy, consultation, drug Information, patient counseling, pharmaceutical care*

ID 198. Rapid Discrimination of Halal and Non-Halal Pharmaceutical Excipients by Ftir Spectroscopy and Chemometrics

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Introduction: The appendage of "Halal" to a product is not just a guarantee that the product is permitted for Muslims, but it has also become a global symbol for quality assurance and lifestyle choice. However, the expansion of halal pharmaceutical market was hindered with the lack of global halal standards on pharmaceutical ingredients and product integrity analytical methodology. **Objectives:** This work aimed to explore the possibility of using FTIR and chemometric to develop multivariate models to authenticate the 'halal-ity' of pharmaceutical excipients with controversial halal status, e.g. gelatine. **Materials and methods:** The fingerprint regions that are reflecting the 'halal-ity' of the substance were identified and used to build a predictive classification model using partial least squares discriminant analysis (PLS-DA). The effects of different spectral pre-treatment process like auto-scaling, baseline correction, standard normal variate, first and second derivatives were evaluated. The optimization of the model performance was established to ensure the sensitivity, specificity and accuracy of the predicted models. **Results:** Significant peaks corresponding to the properties of the gelatine sources have been identified. For both bovine and porcine derived gelatine, the peaks associated can be seen within the regions 3309 – 3280 cm⁻¹, 1634 -1628cm⁻¹ (Amide I), 1543 -1450cm⁻¹ and 1240 -1081cm⁻¹. FTIR spectrum of plant derived gelatine were significantly different where Amide I was absent. The quality and accuracy of the classification models have shown to improve or decrease with certain pre-treatment strategy. **Conclusion:** This rapid and cost effective technique has a potential to be expanded as an authentication strategy for halal pharmaceuticals.

KEYWORDS: *Chemometric; FTIR, halal pharmaceuticals, PLS-DA*

ID 199. Formulation of Effervescent Granule from Robusta Green Coffee Bean Ethanolic Extract (Coffea Canephora)

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Introduction: Robusta coffee (*Coffea canephora*) is one of the many crops cultivated in Aceh and to present day is being used only as a drink. Research shows the potential of other pharmacological activities possessed by coffee, one of which is as antidiabetic. Effervescent granules are one of the oral dosage forms that can mask the unpleasant taste of bioactive substances, have a high aesthetic value, and can contain relatively large doses of bioactive substances. Previous research has shown that ethanolic extract of robusta green coffee beans at 100mg/kgBW rat gave highest percentage of glucose reduction. Based on that research, the dosage was used in this study to be formulated into effervescent granule.

Objectives: This study aims to find the best formulation of effervescent granules preparation using various concentrations of effervescent salt that meets the general requirements of effervescent dosage forms. **Materials and Methods:** The concentrations of citric acid, tartaric acid and sodium bicarbonate used in sequence were 7.35%; 14.7%; 25% (F1); 8.08%; 16.17%; 27.5% (F2); and 8.82%; 17.64%; 30% (F3). Robusta green coffee beans were extracted using maceration method. **Results:** Secondary metabolite screening of extract showed it contained alkaloid, saponin, phenolic, and flavonoid metabolites. Effervescent granules were evaluated and F1 and F2 do not qualify the granules' flowability standard, while F3 qualified in all evaluation standards. **Conclusion:** Based on these results, F3 produced the best effervescent granules that met the general effervescent dosage form's standards.

KEYWORDS: Citric acid, effervescent granules, Green coffee bean, sodium bicarbonate, tartaric acid

ID 200. Knowledge of Self-Medication Among Community in Ngaglik District, Sleman Regency

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Introduction: Self-medication is the use of medicines without a prescription or health professional advice. Over the counter (OTC) medicine is the most common used for self-medication. Knowledge about self-medication is important to be assessed to assure the appropriately used of medicine. **Objectives:** To investigate the community knowledge and practices about self-medication in Ngaglik District, Sleman Regency. **Materials and methods:** A Cross-sectional survey was conducted in 3 villages, Ngaglik District, Sleman Regency. A total of 339

participants were selected by cluster sampling. Data were collected by using a self-administered questionnaire. Descriptive analysis and chi-square test were used to analyze the data. **Results:** Majority of participants were female (61.7%) and mostly were between 26–45 years (49.9%). More than fifty percent participants (59%) had attended high school education. 49.9% participants had good knowledge on OTC self-medication. The level of knowledge about self-medication was significantly associated with the level of education (p values < 0.05). The most common used of OTC medicine for self-medication were analgesic and antipyretics (48.4%), respiratory drugs (29.7%), and gastrointestinal drugs (9.6%). OTC medicine advertisement was the common source of information about medicines for self-medication (39.5%) whereas the source of information from health professional only 2.4%. **Conclusion:** The community knowledge of self-medication still need to be improved. The health professional especially pharmacist have to give more information to community about OTC medicine so they do not only get the information from medicine advertisement.

KEYWORDS: Knowledge, self-medication, sleman regency

ID 201. Knowledge and Awareness Related to Antibiotic Use and Resistance among Youths in Kuala Lumpur

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Introduction: Antibiotic resistance is a tremendous public health concern worldwide, and factors include the inappropriate use of antibiotics among consumers. Misconceptions of antibiotic use are common among the general public, including youths. **Objectives:** The objective of this study was to assess the level of knowledge related to antibiotic use and expectation towards the need for antibiotics amongst Malaysian youths. This study also aimed to assess the relationships between the level of knowledge and expectation, and between the level of knowledge and appropriate use of antibiotics among youths. **Materials and methods:** A cross-sectional study was conducted among 553 youth respondents in public areas around Kuala Lumpur. A self-administered questionnaire was utilized to assess respondents' prior use of antibiotics, their level of knowledge and expectation related to antibiotic use. **Results:** More than half (57.9%) of the respondents had poor knowledge on antibiotics, with only 34.1% of them who correctly disagreed that antibiotics can kill viruses. In addition, majority of respondents had expectation of antibiotic need for most URTI symptoms, which include

common cold (45.2%) and sore throats (44.0%). There was a weak, negative correlation between knowledge score and combined score of expectation for antibiotics ($r = -0.240$, $p < 0.05$). Respondents' knowledge was significantly associated with completion of antibiotic course ($\chi^2 (1, n=261) = 4.702$, $p < 0.05$). **Conclusion:** This study highlighted several knowledge gaps among youths regarding antibiotic use and resistance. Improving knowledge and awareness of youths in this area may be a key strategy to correct misconceptions and improve the use of antibiotics in this population.

KEYWORDS: Antibiotic resistance, expectation, knowledge, youths

ID 203. Comparison on the Chemical Composition and Antioxidant Properties of Essential Oil from Fresh, Boiled and Freeze-Dried the rhizomes of *Curcuma zedoaria*

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Introduction: *Curcuma zedoaria* is a perennial herb that has been traditionally used as medicine. The essential oils of *C. zedoaria* have anti-microbial, anti-inflammatory, anti-hepatotoxic and anti-oxidant activities. In the previous studies, most researchers only focused on the phytochemical properties of *C. zedoaria* L. and its activities. There is lack of study on the influence of pre-treatment of the rhizome of *C. zedoaria* on the chemical composition and antioxidant properties. **Objective:** The aim of this research is to compare the chemical composition and antioxidant properties of the essential oil produced from different pre-treatment methods. **Materials and Methods:** The rhizomes were treated by boiling and freeze-drying before extraction of the essential oil, followed by analysis on antioxidant properties. The chemical composition of the essential oil was analysed using GC-FID and GC-MS methods. **Results:** Fresh rhizome of *C. zedoaria* produced more essential oil (0.55 %) compared to boiled (0.43 %) and freeze-dried (0.20 %) rhizomes. All samples exhibit antioxidant activity in DPPH scavenging and reducing power assays. All the pre-treatment methods had shown significant differences in antioxidant activities ($p < 0.05$). The essential oil from boiled pre-treatment method has higher DPPH radical scavenging activity. In reducing power assay showed that fresh rhizome has the highest antioxidant activity followed by freeze-dried and boiled rhizomes. Based on GC-MS analysis the essential oil from fresh, boiled and freeze-dried rhizomes of *C. zedoaria* mainly contained oxygenated monoterpenes, oxygenated sesquiterpenes, and other aliphatic compounds. **Conclusion:** Chemical

compositions and antioxidant activities of *C. zedoaria* were varies with the pre-treatment methods applied.

KEYWORDS: Antioxidant, chemical composition, curcuma zedoaria

ID 204. Perceived Safety and Effectiveness of Electronic Cigarettes Among Malaysian Adults and Public Support for Regulation

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Introduction: Electronic cigarettes have been used as a harm reduction method towards tobacco cessation. Malaysian government has enforced a strict policy to regulate the sale of electronic cigarette products because its liquid contains nicotine. **Objectives:** This study aimed to explore the general public's perception towards electronic cigarette use. Public support towards electronic cigarette regulation was also examined. **Materials and Methods:** Data were obtained from the National E-Cigarette Survey (NECS) 2016, which used a multi-stage stratified cluster sampling household survey representing all Malaysian adults aged 18 years old. A cross-sectional survey was conducted among a total of 4,288 adults. **Results:** Majority were aged 25–44 years old (44%), completed at least secondary education (69%), of Malay ethnicity (73%), and married (68%). Majority (88.1%) have never used electronic cigarette. A quarter (25.5%) perceived electronic cigarette helps people quit cigarette smoking, while 20.3% perceived electronic cigarette helps people to maintain cigarette abstinence. About 85% believed that electronic cigarette use do not help in improving breathing and coughing. Majority (91.8%) disagreed that electronic cigarettes should be allowed in places where tobacco smoking is banned. Thus, 63.4% agreed that electronic cigarette should be banned completely rather than regulated. **Conclusion:** Majority of general public had negative perception about electronic cigarette use.

KEYWORDS: Effectiveness, electronic cigarette, malaysia, perception, regulation, safety

ID 205. Extraction, Analysis, Anti-Tyrosinase Activity and Formulation of Asiaticoside Rich Fraction from *Centella asiatica*

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Introduction: The bioactive component of *Centella asiatica* (L) Urban, asiaticoside is known to exhibit many therapeutic effects. **Objectives:** This study aimed to develop asiaticoside fractionation method using activated charcoal, evaluate the bioactivity on melanogenesis of the fraction, as well as the optimization and characterization of asiaticoside rich fraction from *C. asiatica* (CAEMD) hydrogel. **Materials and Methods:** TLC, HPLC, and LC-DAD-ESI-ITMS in positive ion mode were adopted to evaluate asiaticoside in CAEMD fraction qualitatively and quantitatively. **Results:** The concentration of asiaticoside found was 11.27 % of the CAEMD fraction. In LC-DAD-ESI-ITMS, asiaticoside was found the second most abundant compound in CAEMD and the main fragment ions formed were at m/z 976.25 and m/z 453.33 derived from [M+NH₄]⁺ and [M+H-Glu-Glu-Rha-2H₂O] respectively. The anti-tyrosinase activity of CAEMD fraction had increased by two-fold compared to the crude extract ($p < 0.05$) while asiaticoside alone did not show any activity. Carbopol 940 gel containing CAEMD was successfully optimized using three-factor, three-level Box-Behnken design, and C940 0.6 %, TEA 0.27 %, and mixing speed at 650 rpm were selected as the optimized condition. **Conclusion:** CAEMD fraction has a promising effect on inhibiting melanogenesis pathway and the CAEMD formulation has successfully developed in this study.

KEYWORDS: Anti-tyrosinase, asiaticoside, fractionation, Hydrogel

ID 206. Evaluation of WHO Core Drug Use Indicators in Lahore, Punjab Pakistan

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Introduction: World Health Organization (WHO) has defined core indicators for drug use evaluation, which cover four main parameters of the drug use process i.e., quality in prescribing, dispensing, health care facilities and patient care. However, limited data is available to highlight the level of compliance to these indicators in Pakistan. **Objectives:** To evaluate and compare drug use process per WHO core indicators in private and public

hospitals of Lahore. **Materials and Methods:** A cross sectional study to collect data using WHO standardized questionnaire during June-July 2019. Descriptive statistics was used, and data were analysed using SPSS. **Results:** 1229 prescriptions/patients were assessed in 17 hospitals (12 public and 5 private). In public hospital, mean number of drugs per encounter was 3.15, while, generic names were prescribed for 4.15%, as compared to 3.3% and 4% in private hospitals respectively. Similarly, antibiotics and injectable prescription were higher in private hospitals i.e., 50% and 20% respectively as compared to 19.4% and 6.67%. However, patient knowledge, average consultation and dispensing times were significantly better in private hospitals as compared to public. Not a single drug was adequately labelled in public or private hospital. Formulary was present in all. **Conclusion:** Study highlighted significant lacking in generic prescribing, rampant injectable practices, limited consultation and dispensing times, and poor knowledge of patients especially in Public hospitals. Together these factors contribute to pervasive irrational use of medicines.

KEYWORDS: Drug use evaluation, drug use, pakistan, WHO core indicator drug use

ID 208. Hospital Pharmacy Practice across Different Countries: A Scoping Review

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Introduction: The pharmacy profession underwent tremendous changes over the past decades that has led to an expansion in the breadth of professional practice. Pharmacists' roles are no longer limited to conventional services of drug preparation and distribution, it has expanded its boundaries to encompass more patient-centered services to ensure optimal therapeutic outcome. **Objectives:** To explore the role of hospital pharmacists in the provision of both clinical and traditional pharmaceutical services across different countries as well as the barriers to the implementation of these services. **Materials and Methods:** A scoping review of primary research studies retrieved from a range of databases including CINAHL, PubMed, Scopus, EBSCO Discovery Service and Web of Science was performed. The review was limited to publications in English between January 1, 2015, and July 29, 2019. **Results:** Across the five databases, a total of 650 abstracts were sourced. Four additional records were identified through manual search. Following removal of duplicates, 597 records remained. Titles and abstracts were screened for relevance, leaving 27 articles for full-text review. A further 16 were removed at this point, leaving a total of 15 papers for the final review. The data

highlight an inadequate level of clinical services provided in some countries in comparison to clinical settings in others. Major barriers reported include lack of policy, time, remuneration and clinical skills. **Conclusion:** This review revealed variability in the role of hospital pharmacists across different countries and the barriers to be addressed to narrow this gap in professional practice.

KEYWORDS: *Barriers, clinical services, clinical pharmacy, conventional services, hospital pharmacy, pharmacy practice, pharmaceutical services, pharmacist*

ID 209. Fenofibrate - Warfarin Interaction: Hospital Kuala Lumpur Experience

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Introduction: Case reports in western populations reported that fenofibrate enhances the anticoagulatory effect of warfarin. We report ten cases of fenofibrate-warfarin interaction among Malaysian patients managed in anticoagulation clinic of Hospital Kuala Lumpur. **Materials and Methods:** Patients taking warfarin and micronized fenofibrate 145mg daily concurrently were identified in May 2018. Ten active patients were included and the relevant data were retrieved retrospectively. **Results:** All patients received warfarin for stroke prevention in atrial fibrillation (AF), with a target international normalised ratio (INR) of 2 to 3. No dose adjustment was done upon initiation of fenofibrate. Warfarin dose was adjusted to achieve the targeted range but fenofibrate was not discontinued. Eight patients had INR levels above target range when INR being reassessed between 20 to 62 days after initiation of fenofibrate. Their weekly warfarin doses were between 17.5mg-46.5mg. Baseline INR ranged between 1.6 -3.1. Percentage of dose reduction ranged between 5%-60%. Four of the patients were on other concurrent interacting medications such as statin and levothyroxine. Only one patient, whom with an INR 3.1 before initiation of fenofibrate, required admission for hematoma (INR 12). Two patients had INR within target range and INR were assessed 14 and 21 days after initiation of fenofibrate. Their weekly warfarin doses were between 24.5mg and 26.5mg while baseline INR was 2.8 and 1.9 respectively. **Conclusion:** Interaction between fenofibrate and warfarin may increase INR among Malaysian patients, thus close monitoring of INR is warranted. Dose reduction may be considered upon initiation of this drug combination for patients with AF.

KEYWORDS: *Fenofibrate, interaction, INR, warfarin*

ID 211. Resource Utilisation and Cost Variations of Inpatient, Daycare and Outpatient Hysterectomy in A Tertiary-Care Hospital in Malaysia

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Introduction: Hysterectomy, a common gynaecological procedure, can be conducted in inpatient, daycare or outpatient setting. Resource utilisation and costs of hysterectomy can vary in different settings. **Objectives:** This study aimed to describe resource utilisation and cost of hysterectomy in various settings within a tertiary-care hospital in Malaysia from the healthcare provider perspective. **Materials and methods:** This study was based on inclusive sampling of all patients with complete medical records who underwent diagnostic hysterectomy procedures in 2014. Resource use was documented and costed until the diagnostic hysterectomy procedure was a success, defined as achieving visualisation of the uterine cavity. Unit costs were estimated by combining top down (general overheads for hospital services) and bottom up (activity-based costing for clinic visits, hospitalisation, medication, procedures and diagnostic investigations) approaches. Equipment costs were annualised based on purchase price and number of users. **Results:** The study population (n=111) underwent hysterectomy in daycare (n=29) and inpatient (n=65) settings with a rigid hysteroscope under anaesthesia while the outpatient (n=17) setting used a flexible hysteroscope without anaesthesia. Mean cost per patient in outpatient, daycare and inpatient settings were RM1547, RM1681 and RM1987 respectively (price year 2014). The main cost drivers were: equipment costs for outpatient setting (65% of total cost), operation theatre costs for daycare setting (33% of total cost) and ward costs for inpatient setting (40% of total cost). A hypothetical scenario analysis with equal number of patients undergoing hysterectomy in each setting estimated the average cost per patient in outpatient (n=50), daycare (n=50) and inpatient settings (n=50) could be RM874, RM1492 and RM2036 respectively. **Conclusion:** Optimising the use of outpatient hysterectomy by stratifying patients based on eligibility to undergo outpatient hysterectomy, followed by hysterectomy in the daycare or inpatient setting in case of failure to visualise the uterine cavity, could potentially be cost-saving within the Malaysian healthcare system.

KEYWORDS: *Cost-consequence analysis, costing, pharmacoeconomic, resource utilization*

ID 213. Analysis of Adverse Drug Reactions Reported at Hospital Raja Permaisuri Bainun (HRPB), Ipoh, Perak, in 2017

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Introduction: Adverse drug reactions (ADR) is a common public health problem and can cause considerable morbidity and mortality. Describing the trend and pattern of ADRs can encourage its reporting. **Objectives:** The aim was to identify the characteristics of the adverse drug reactions reported to HRPB, a tertiary hospital. **Materials and Methods:** This is a retrospective study carried out between December 2018 to May 2019, whereby 288 ADR reports received at the hospital between January to December 2017 were reviewed. Analysis of patient demography, types of drugs and reactions, severity, patient outcomes and designation of reporters was made. Data were analysed using SPSS version 21. **Results:** It was found that there was a nearly equal incidence of ADR between male and female. Common age of patients with ADR was 46–60 years old. Antibacterials (23.6%) caused the most ADRs, followed by analgesics (13.7%) and epileptics (7.6%). There were mild (34.4%), moderate (44.4%), and severe (21.2%) ADRs. Reports of life-threatening ADR was 12.4% with 8.5% causing disability or incapacity among the patients. There was one report of birth defect due to thalidomide. Pharmacists contributed the most (63.9%) reports. **Conclusion:** The various characteristics of ADR which signified the importance of ADR reporting were identified.

KEYWORDS: Adverse drug reactions, patient outcomes, retrospective

ID 215. Formulation Optimization of Myristica fragrans (Nutmeg) Seed Oil Nanoemulgel

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Introduction: Nutmeg seed oil with a concentration of 10% showed high activity as an antimicrobial against *Staphylococcus aureus* cause of acne. The research on nutmeg oil nanoemulgel has never been reported, whereas this dosage form is able to provide high penetration of active substances into the skin. **Objectives:** the objectives of this research were to acquire the optimum composition of nutmeg nanoemulgel oil and know the validity of the model depicting the effect of composition on the responses. **Materials and Methods:** The formulation optimization used design expert program with the general factorial design method. The factors were carbopol 940 and tween 80: PEG 400 (3:2). The responses, namely the viscosity and spreadability. **Results:** The optimum composition of nutmeg seed oil nanoemulsion consists of 10% nutmeg seed oil, 0.5% carbopol 940, 20% tween 80: PEG 400 (3:2). Both of

the responses followed the main effect model. The predicted viscosity and spreadability of the optimum formulation was 5.28 cm and 32,477.8 cps respectively. These values were not significantly different from the experimental response values ($p > 0.05$), so the models were valid. **Conclusion:** By using general factorial design, the optimum composition of nutmeg seed oil nanoemulgel was successfully obtained with a valid equation model.

KEYWORDS: *General factorial design, nutmeg seed oil, nanoemulgel*

ID 216. Knowledge, Perception and Confidence of Physicians and Pharmacists at IIUM Medical Centre towards Pharmacogenetics Application in Clinical Setting

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Introduction: The importance of pharmacogenetics practices in hospital settings is to improve the patients' treatment by maximising the therapeutic outcomes and reduce adverse effect of the drug. In Malaysia, the acceptance of such approach in clinical setting has scarcely being evaluated. **Objectives:** This research aimed to assess the knowledge, perception & confidence of physicians and pharmacists at IIUM Medical Centre (IIUMMC) towards pharmacogenetics application in the clinical setting. **Materials and Methods:** This is a cross-sectional study with a set of validated questionnaires being distributed to the physician and pharmacist through convenience sampling method. The data was further analysed using SPSS software. **Results:** Thirty three participants among the physicians and pharmacists participated in the study. A majority of them perceived a very good knowledge with regards to pharmacogenetics where 57.6% rendered highly knowledgeable and 36.4% with moderate understanding on the subject. As for perception, more than half of 33 respondents showed overall positive scores. This indicated that healthcare practitioners have a positive perception regarding pharmacogenetics and its implications. However nearly half of the respondents showed neutral perception when they were asked about the relevance of pharmacogenetics testing in the clinical settings. Furthermore, most of the respondents recorded a low level of self-confidence towards the implementation of pharmacogenetics in their healthcare settings with only 15.15% of the respondents claimed overall high self-confidence. **Conclusion:** Eventhough majority of healthcare practitioners have high knowledge and good perception of pharmacogenetics, they still have low confidence towards the practice in a clinical setting.

KEYWORDS: *Attitude, confidence, clinical setting, knowledge, pharmacogenetics application*

ID 217. In silico Evaluation of Acetylcholinesterase Inhibitory Effect of Selected Flavanones

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Introduction: Alzheimer's disease (AD) affects 1 in 10 persons above the age 65. One of the approved class of drugs for AD is acetylcholinesterase inhibitors. However, these inhibitors cause some side effects, have short-term beneficial effects and have significant drug-drug interactions. Several natural products exhibited significant acetylcholinesterase (AChE) inhibitory effect. **Objectives:** To screen the selected flavanones for their AChE inhibitory effect *in silico*. **Materials and Methods:** The *S*- and *R*-enantiomers of eriocitrin, eriodictyol, hesperetin, hesperidin, naringenin, naringin, narirutin and neohesperidin were subjected to molecular docking by using AutoDock Vina 1.1.2 against acetylcholinesterase (PDB ID: 4EY7). Donepezil was used as positive control. The binding interactions were visualised using BIOVIA Discovery Studio 4.5. The molecular properties of all the compounds (logP, topological polar surface area (TPSA), number of atoms, molecular weight, number of rotatable bonds, hydrogen bond acceptor and hydrogen bond donor) were obtained from www.molinspiration.com and compared for their adherence to Lipinski's rule of five and permeability into central nervous system. **Results:** Eriodictyol, hesperetin and naringenin showed good binding affinities, adhered to Lipinski's rule of five and low TPSA value, indicating significant inhibitory effect on AChE, good oral absorption and blood-brain barrier penetration. The analysis of 2D interactions showed that the important non-covalent interactions are H bond and hydrophobic interactions. The important residues that are involved in all the flavanone-AChE interactions are serine, histidine, glycine, phenylalanine, tryptophan and tyrosine. **Conclusion:** Eriodictyol, hesperetin and naringenin are worth to be further investigated using *in vitro* and *in vivo* studies.

KEYWORDS: *Acetylcholinesterase inhibitory activity, autodock vina, docking, flavanones, in silico*

ID 218. Knowledge, Attitude and Perception of Final Year Pharmacy Students at Kulliyah (Faculty) of Pharmacy IUM on Pharmacogenomics

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Introduction: Pharmacogenomics is a science that incorporates three different field of studies; pharmacology, medicine and genomics. It has been found out that, applying pharmacogenomics in clinical setting can help in improving patient outcome hence justifying the needs for this subject to be incorporated in the curriculum of a pharmacy program. **Objectives:** This study aimed to evaluate the knowledge, attitude and perception regarding pharmacogenomics among final year pharmacy students. **Materials and Methods:** In this cross-sectional study, the respondents were given a set of validated questionnaires each, which consists of demographics, knowledge, attitude and perceptions domains. All final year students were recruited. **Results:** Out of 94 participants, only 73.4% had completed the survey. Based on the results of the survey, only about 26.1% respondents have high level of knowledge whereas 46.4% and 27.5% of the participants have medium and low level of knowledge respectively. It was observed that 63.8% students have positive attitude towards pharmacogenomics while 7.2% having negative attitude and the rest are intermediate. In addition, majority of the students have good perception on pharmacogenomics with 59.4% responses, followed by 37.7% for medium perception and only 2.9% have bad perception toward pharmacogenomics. **Conclusion:** The results showed low knowledge of the students on pharmacogenomics subject but with positive attitude and good perception towards enhancement of this field of study in the curriculum.

KEYWORDS: *Attitude, knowledge, perception, pharmacogenomics, pharmacy students*

ID 219. Knowledge and Perception of Final Year Medical and Pharmacy Students Towards Antibiotics and Antimicrobial Stewardship in Punjab, Pakistan

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Introduction: In this era of antimicrobial resistance, knowledge of antibiotics and antimicrobial stewardship (AMS) is paramount for rational use of medications. However, in Pakistan, the notion, scope and implementation of AMS remain skimpy. **Objectives:** To appraise and compare knowledge of antibiotics and perception about AMS between final year medical and pharmacy students. **Materials and Methods:** Cross sectional study that deployed a pre-validated questionnaire with two main sections for knowledge and perception on a summative scale. Descriptive statistics was used to measure the

median and differences in both groups were measured using Mann-Whitney U Test using SPSS version 23.0. Study was conducted in 12 medical and 9 pharmacy colleges in Punjab. **Results:** A total of (n= 580) responded to the survey of which n= 143 (24.7%) were Medical and n= 437 (75.3%) were pharmacy student. The perceptions of pharmacy students regarding potential benefits of AMS programs were positive and significantly higher (60.5%) as compared to Medical students (53.2%) in total score. Both groups recommended the incorporation of AMS program at a community pharmacy level to improve rational use of antimicrobial agents. However, the overall score showed statistically significant difference in knowledge in two groups (p=0.107). **Conclusion:** The knowledge of antibiotics is better in pharmacy students than medical students, however, the perceptions regarding AMS are positive with no significant difference in both groups. Authors suggest to incorporate a dedicated module or post graduate diploma on antibiotic utilization for students who wish to pursue a clinical career in pharmacy.

KEYWORDS: Attitude, antimicrobial stewardship, antibiotic resistance, antimicrobial irrational use, knowledge, perceptions, pakistan

ID 220. Challenges in Measuring Medication Adherence: Lessons Learned From A Survey Among Rural Community

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Introduction: Despite patients' adherence to medication is an important factor in chronic disease management, providing firsthand information about the extent of non-adherence among rural community is challenging. **Objectives:** A survey involved patients with hypertension living in rural areas has been previously reported. A validated instrument in Bahasa was applied to measure patients' adherence to medication. This study aimed to highlight the challenges that arose during the survey and how they could be anticipated. **Materials and Methods:** Methodological as well as practical challenges were identified by reviewing the surveyors' field notes and other available sources (e.g. email, text message). Strategies to address these challenges were formulated accordingly. **Results:** The challenges were categorized into three groups: (1) instrument's preparation: lack of validated questionnaire for measuring medication adherence in Bahasa; copy right issues around using Morisky's scale; lack of valid patients' data in the community setting (2) data collection: dealing with rural patients' daily schedule; researcher- vs. self-administered questionnaire; "translating" into local/lay language; gathering information from the elderly and/or low-literate patients; (3) data analysis: the recall period, self-report bias; forgetfulness effect; "defining" partial adherence. Study in rural setting therefore needs to consider: the use of validated questionnaire, participation

of community health liaison persons, understanding the cultural context in data collection, and anticipating unexpected or additional findings from the data gathered. **Conclusion:** The challenges in measuring medication adherence identified in this study might contribute for the study's process and need to be addressed in the future studies in rural settings.

KEYWORDS: Chronic disease, hypertension, medication adherence, rural health

ID 221. Association of Statin-Intensities on Recurrent Angina after Coronary Stenting

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Introduction: There is still a lack of evidence regarding whether high-intensity statin at hospital discharge prevents recurrent angina in patients undergoing coronary stenting for acute coronary syndrome. **Objectives:** This study aimed to determine the association between statin-intensities and recurrent angina after coronary stenting. **Materials and Methods:** This cohort retrospective study in doctor Moewardi Hospital Surakarta, Indonesia was approved by the local ethical committee. The medical record data was used on this observational study. The sample criteria were adult patient (≥ 18 years of age) with acute coronary syndrome undergoing coronary stenting from January 1st – December 31st 2016 and use of high-intensity or moderate-intensity statin after coronary stenting. The primary end point was recurrent angina within one-year post coronary stenting. Data were analyzed using chi-square test. **Results:** Sixty-four patients were included on this study. There was no significant difference between high-intensity and moderate-intensity statin groups (p>0,05) at baseline characteristics of the subjects. The statin dose intensity was associated significantly with recurrent angina (p<0,05). Within one year after coronary stenting, 80% (43 from 55 patients) on moderate-intensity statin group and 40% (4 from 9 subject) on high-intensity group experienced recurrent angina. **Conclusion:** Recurrent angina after coronary stenting was associated with statin-intensities. High-intensity statin group had a lower frequency of recurrent angina than moderate-intensity statin group.

KEYWORDS: Coronary stenting, recurrent angina, statin-intensities

ID 222. Effects of Exposure to Orthosiphon stamineus Extract During the Lactation Period on the Behaviors of Prenatally-stressed Male Rat Offspring

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Introduction: Postpartum antidepressant administrations to rat dams have shown to reverse aberrative behavior in prenatally-stressed offspring. Rosmarinic acid, an active compound of *Orthosiphon stamineus*, is known to possess antidepressant activity. It is hypothesized that *O. stamineus* will ameliorate the adverse effect of prenatal stress on offspring behavior. **Objectives:** To assess the effects of exposure to *O. stamineus* extract during the lactation period on locomotor activity, depressive-like behaviors and cognitive function of rats' male offspring exposed to prenatal stress. **Materials and Methods:** Sprague Dawley rat dams were either subjected to stress or left undisturbed (nonstressed) throughout the gestation period. At postpartum day 2–25, some of the stressed dams were treated with *O. stamineus* extract 100mg/kg/day p.o. (OSE) or amitriptyline 20mg/kg/day p.o. (AMI). The male offspring of all dam groups (nonstressed, untreated stressed, AMI- and OSE-treated stressed rats; n=7–9) were subjected to open field (OFT), novel object recognition (NOR) and forced swim (FST) tests at 7–8 weeks old. **Results:** OSE offspring decreased the grooming time induced by prenatal stress (one-way ANOVA $p < 0.05$), and had the lowest distance moved in the arena (one-way ANOVA $p < 0.05$). OSE offspring also explored objects the least during NOR acquisition phase, and hence they could not differentiate novel and familiar objects (one-sample t-test $p > 0.05$). Immobility in FST was not affected. **Conclusion:** Our finding found *O. stamineus* extract did not exert positive effects on the behaviour of prenatally-stressed male offspring, rather it reduced the offspring general locomotion. Maternal nurturing behavior should be investigated if it confounded the findings.

KEYWORDS: *Antidepressant, orthosiphon stamineus, offspring behavior, prenatal stress*

ID 223. A Comparison of Drug Groups Employed in Deliberate Self-Poisoning Between Adolescents and Adults: A Decade in Review (2008–2017) Derived from the Malaysian National Poison Centre Data

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Introduction: In developing countries, deliberate self-poisoning (DSP) is a common method largely employed by high-risk groups to engaged in self-harm. **Objectives:** This study compares the drug groups employed by adolescents and adults engaged in self-harm based on poisoning exposure calls reported to this centre. **Materials and methods:** Intentional poisoning exposure cases amongst adolescents (15–19 year olds) and adults

(20–74 year olds) from 2008 to 2017 was analysed retrospectively. **Results:** A total of 7349 intentional poisoning cases involving drugs were identified in adults whilst 1555 cases in adolescents. Prevalence was higher in females for both adult and adolescent groups. Incidence was higher in Malays (26.3%) and Indians (26.2%) for adults. However, for adolescents, Indians (45.7%) showed the highest prevalence. Suicidal intent was the main motivator for DSP cases in both age groups, with 63.7% in adults and 83.4% in adolescents. Adults preferred psychiatric drugs (31.8%) most followed by analgesics (16.2%) and mixed type of drugs (11.6%). Whereas for adolescents, analgesics (25.3%) was most popular besides mixed type of drugs (14%) and psychiatric drugs (13.9%). **Conclusion:** Outcomes reveal a shift of agent preference from analgesics to psychiatric drugs across both age groups. Appropriate steps must be implemented to prevent further incidences from arising.

KEYWORDS: *Adults, adolescents, drug groups, comparison, deliberate self-poisoning (DSP)*

ID 224. Knowledge and Perception of Medical Officers and Hospital Pharmacist Towards Antibiotics and Antimicrobial Stewardship in Punjab, Pakistan

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Introduction: In this era of antimicrobial resistance, knowledge of antibiotics and antimicrobial stewardship (AMS) is paramount for rational use of medications. AMS is considered a core element in the current clinical guidelines in the developed world. However, in Pakistan, the notion, scope and implementation of AMS remain skimpy. **Objectives:** To appraise the knowledge and perception of Medical Officers (MOs) and Hospital Pharmacists (HPs) about antibiotics and AMS. **Materials and Methods:** Cross sectional study using a validated questionnaire. Descriptive statistics was used to measure the median and difference in both groups was measured through Mann Whitney U test using SPSS version 23.0. **Results:** A total of (n=343) responded to the survey of which n=308 (89.8%) were MOs and n=35 (10.2%) were HPs. The perceptions of HPs regarding potential benefits of AMS programs were positive and significantly higher (77.1%) as compared to 52%. Further, 61.4% and 68.6% of MOs and HPs respectively, favored the incorporation of AMS programs in community pharmacy. The overall score showed statistically significant difference ($p=0.271$) of perceptions among MOs and HPs

and the overall score revealed that knowledge of MOs and PPs was statistically significantly different ($p=0.145$). **Conclusion:** The knowledge of antibiotic stewardship is better in HPs than MOs, however, the perceptions on AMS are generally positive in both groups.

KEYWORDS: Attitude, antimicrobial stewardship, antibiotic resistance, antimicrobial irrational use, knowledge, perception, pakistan

ID 225. Item analysis of Objective Structured Clinical Examination (OSCE) Assessment Rubrics for Undergraduate Pharmacy Students

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Introduction: Objective Structured Clinical Examination (OSCE) is one of the assessments that objectively evaluate the students' competency in handling the specific hands-on clinical tasks. The rubrics of the assessment is very critical to be evaluated ensuring its validity. **Objectives:** This study aimed to evaluate the usefulness of the item analysis method in objectively analyse the validity of the assessment rubrics developed for OSCE in the field of pharmacy. **Materials and Methods:** Fifty-four (54) students participated in the OSCE and were divided into three groups of the concurrent session with four active stations and two preparatory stations. The examiners were well-trained on the assessment rubrics before the examination for standardization. The questions and assessment rubrics were developed and vetted earlier in a group of vetting committee who were expert in the field of pharmacy practice and languages. There were four (4) tasks in the active stations namely; i) Insulin device counselling, ii) Extemporaneous preparation of spironolactone syrup, iii) Unit of dose supply and iv) Psychotropic drugs recording and supply. **Results:** Majority of the items in the rubrics showed acceptable levels of discrimination (>0.3) and difficulty index (0.25–0.85) except for a few items that need to be reviewed and improvised literally or constructively. **Conclusion:** Item analysis method is useful in analysing the validity of the assessment rubrics developed for OSCE in pharmacy field.

KEYWORDS: Assessment rubrics, item analysis, objective structured clinical examination, undergraduate pharmacy students

ID 226. The Role of Polyamines in *Beta vulgaris* (beetroot), *Ziziphus jujube* (jujube) and *Vitis vinifera* (raisin) on Human Lung Adenocarcinoma Cells Proliferation and Apoptosis

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Introduction: Polyamines are vital in maintaining human health because they are crucial for cell growth. Excessive intracellular polyamines in diet may promote unwarranted cell proliferation. **Objective:** This study aimed to investigate polyamines as a chemopreventive agent in selected fruits against human lung adenocarcinoma cells, A549. **Materials and Methods:** *Beta vulgaris* (beetroot), *Ziziphus jujube* (jujube) and *Vitis vinifera* (raisin) were freeze dried and kept at -80°C until analysis. The anti-proliferative activity of selected fruits was assessed on A549 cells using MTT assay and the effect on A549 growth was completed via Trypan blue dye exclusion assay. Cell cycle profile and apoptosis were conducted with flow cytometer, while caspase assay was done using microtiter plate-reader. The quantification of intracellular polyamines was done using HPLC and the effect of these medicinal plants on the gene expression of selected polyamine metabolic enzymes was determined using qPCR. **Results:** The IC_{50} ranged between 15 to 30 mg/ml for these three fruits. A549 growth indicated significant decreased in cell viability after 48h. Annexin-V/PI demonstrated significant increase in early apoptosis in beetroot treated cells while other fruits caused significant increase in late apoptosis at 48h of treatments. There was a significant downregulation of ODC gene in cells treated with jujube and raisins while upregulation of SSAT gene in beetroot treated cells. **Conclusion:** These medicinal fruits are the promising candidates for food-based chemoprevention strategy for their low polyamine content, vital in modulating polyamine metabolism and promoting cell death.

KEYWORDS: Lung cancer, nutritional cancer therapy, prophetic medicinal fruits, polyamines

ID 227. Knowledge and Perception of Final Year Medical and Pharmacy Students (MBBS and Pharm-D) Towards Antibiotic Use and Resistance in Lahore, Pakistan

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Introduction: A thorough understanding of the use of antimicrobial agents and phenomenon of resistance is a key attribute expected in medical and pharmacy graduates. Hence, it would be of significant relevance to appraise knowledge, attitude and perception of those who would

enter in the healthcare sector as guardian of antimicrobial use. **Objectives:** To appraise the knowledge, attitude and perception of final year medical and pharmacy students about antimicrobial use and resistance. **Materials and Methods:** Cross sectional study using a validated questionnaire. Descriptive statistics was used to measure the median and differences in both groups were measured through Chi-Square test using SPSS version 23.0. **Results:** A total n=580 students responded to the survey of which n=143 were medical and n= 437 were pharmacy students. Only 28.4% and 18.2% of medical and pharmacy students were familiar with the term "Antimicrobial stewardship", respectively. 70.7% of pharmacy and 73.5% of medical students agreed that strong knowledge of antimicrobials is important in clinical career. Both groups urged more education on antimicrobial resistance and appropriate use of antimicrobials. There was statistically significant difference between knowledge scores of both groups. **Conclusion:** Generally, there were some gaps in the knowledge especially in the pharmacy students, in scenario-based questions. Authors suggest universities to incorporate a dedicated module or postgraduate diploma on this topic for the students who wish to pursue a clinical career in pharmacy.

KEYWORDS: Attitude, antimicrobial resistance, antimicrobial irrational use, knowledge, perception, pakistan

ID 228. What We Are Teaching to Our Medical and Pharmacy Graduates in Punjab, Pakistan: A Cross Sectional Study of Students' Viewpoint on the Quality of Education on Antimicrobial Use And Resistance

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Introduction: Antimicrobial stewardship modules have gained popularity in the educational circles in developed countries. These modules prepare students on the concepts of rational use of antimicrobials to avoid antimicrobial resistance. However, in Pakistan, limited studies have evaluated the extent these concepts are taught in pharmacy and medical schools through students' perspective. **Objectives:** To explore medical and pharmacy student's perspective on the quality of education delivered to inculcate concepts of antibiotic use and resistance. **Materials and Methods:** Cross sectional study using a validated questionnaire. Descriptive statistics was used to measure the median and differences in both groups were measured using Chi square test using SPSS version 23.0. **Results:** A total of 550 students responded the survey of which 330

were Pharm-D and 220 were MBBS students from 23 medical and 19 pharmacy institute across Punjab. Mean correct knowledge score was 56%, with statistically significant differences between study sites and sources of information used to learn about antimicrobials. Only 23% had completed a clinical infectious diseases rotation during medical or Pharmacy College while, 61% students rated the education regarding appropriate use of antimicrobials to be useful or very useful. More than 80% pharmacy students reported lack of training on the rite duration of treatment for specific infections. **Conclusion:** The study findings implied a dissatisfaction of both pharmacy and medical students on the quality of education regarding AMS and antibiotic use. There is serious lacking in practical training especially in pharmacy schools. However, students are enthusiastic to learn more through problem-based learning.

KEYWORDS: Antimicrobial resistance, antimicrobial irrational use, antimicrobial stewardships, antibiotic use, knowledge, medical education, pharmacy education, perceptions, pakistan

ID 229. Acute Nicotine Treatment Increases 'Downstream Regulatory Element Antagonistic Modulator' (DREAM) Protein Expression in Hippocampal CA3 Region of Sleep Deprived Rats

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Introduction: Sleep deprivation can disturb synaptic plasticity of the brain which leads to learning and memory impairment. Acute nicotine treatment has been shown to attenuate the negative effects of sleep loss. **Objectives:** This study investigates the expression of DREAM protein in hippocampal CA3 of REMsd rats after acute nicotine treatment. **Materials and Methods:** Sprague Dawley rats were divided into groups of 'rapid eye movements sleep deprivation' (REMsd), positive control of wide platform and normal control for 72 hours. In that period of time, saline or nicotine (1mg/kg) was given subcutaneously 12 hourly. The rats were then sacrificed, and their brains were harvested for the DREAM protein's immunohistochemistry and western blot analysis. **Results:** REMsd group of rats showed a significant increase of hippocampal CA3 DREAM protein expression, compared to other experimental groups. Acute nicotine treatment significantly prevented these effects and decreased expression and down-regulated the mean relative level of DREAM protein in the CA3 region of the hippocampus. **Conclusion:** This study suggests that changes of DREAM protein of rat's CA3 hippocampus and mean relative level of DREAM protein involved in the mechanism of acute nicotine treatment-activated cholinergic neurons, which decrease the effects of learning and memory impairment due to sleep loss.

KEYWORDS: DREAM, hippocampal CA3, learning, memory, nicotine, REMsd

ID 230. Effect of Non-Hydrogen Peroxide on Antibacterial Activity of Malaysian Meliponini Honey against *Staphylococcus aureus*

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Introduction: Stingless bee is an insect belonging to the family Apidae and is named according to its non-stinging ability. It is highly producing *Meliponini* honey which is commonly referred to as stingless bee honey. *Meliponini* honey is one of the crucial natural sources and is able to get rid of the infectious microorganisms including *Staphylococcus aureus* as a result of antibacterial activity. Some studies have proofing that antibacterial activity of natural honey is an effect from hydrogen peroxide by which is contradict with too many studies. **Objectives:** This study aimed to explore the antibacterial activity of Malaysian *Meliponini* honey which composed of non-hydrogen peroxide against *S. aureus*. **Materials and Methods:** *Meliponini* honey was used as an antibacterial agent for the treatment of *S. aureus* in agar well diffusion assay. An amplex red hydrogen peroxide kit was also used to identify the presence of hydrogen peroxide in the honey. Meanwhile, non-hydrogen peroxide activity was performed by using honey-catalase treated. **Results:** For the first time, we found that hydrogen peroxide was absent in all *Meliponini* honey samples with higher antibacterial activity (11.05 ± 0.20) compared to *Apis* honey (9.03 ± 0.22) in agar well diffusion assay. **Conclusion:** Non-hydrogen peroxide in *Meliponini* honey is a bioactive compound and is beneficial for increasing human health from microbial infection. Antibacterial activity of Malaysian *Meliponini* honey are accomplished by non-hydrogen peroxide.

KEYWORDS: Antibacterial activity, meliponini honey, non-hydrogen peroxide

ID 231. Comparison between Mueller-Hinton Broth and Tryptic Soy Broth for Formation of *Pseudomonas aeruginosa* and *Streptococcus pyogenes* Biofilms

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Introduction: Biofilm formation has different stage and classification based on bacteria strain, culture vessel and technical aspect used. Biofilm is formed in culture vessel to represent an original mode of infection towards human. Microbial concentration, growth medium, supplement and incubation time are among multiple factors to successfully form biofilm in culture vessel. **Objectives:** This study aimed to identify the optimum condition of biofilm to be formed in 96-well plate by culturing *P. aeruginosa* and *S. pyogenes*. **Materials and Methods:** We utilized the infectious and pathogenic bacteria, *P. aeruginosa* and *S. pyogenes* strains. These bacteria were cultured in Mueller-Hinton Broth (MHB) and Tryptic Soy Broth (TSB) at two different optical densities (OD 0.05 and 0.1). After certain incubation time, the formed biofilm was stained by using 0.1% crystal violet. The stained bacteria were aggregated and measured by using a micro plate reader. Biofilm was then classified based on the bacterial adherence to the plate. **Results:** Results showed that *P. aeruginosa* and *S. pyogenes* biofilms were strongly formed on days three and five in MHB and TSB. However, the strongest biofilm formation was seen on day three after *P. aeruginosa* being incubated in MHB at OD 0.1 and after *S. pyogenes* being incubated in MHB at OD 0.05. Biofilm formation is ranged between weak, moderate and strong in accordance to the density of bacterial adhesion. **Conclusion:** *P. aeruginosa* and *S. pyogenes* biofilms were optimized at specific optical density (0.1 and 0.05, respectively) for three days' cultivation in MHB.

KEYWORDS: Biofilm, mueller hinton broth (MHB), pseudomonas aeruginosa, streptococcus pyogenes, tryptic soy broth (TSB)

ID 232. Optimization of Floating Tablet Containing Glibenclamide Using Simplex Lattice Design

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Introduction: Glibenclamide is second-generation sulfonylureas drugs that are widely used in diabetes type 2 therapies. Glibenclamide in floating tablet formulations is used to improve the bioavailability. **Objectives:** The aim of this study was to determine the optimum composition of floating tablets of glibenclamide by simplex lattice design. **Materials and Methods:** The tablets were prepared by wet granulation technique, using HPMC K100LV and Carbopol 940 as polimers. The optimum formula was determined based on numeric method with physical properties, floating characters, and

dissolution profile of tablets. **Results:** The combination of HPMC K100LV and Carbopol 940 as matrix could accelerate floating lag time, decreased friability, hardness, and dissolution of glibenclamide release from the dosage form. The **Conclusion:** The optimum composition of glibenclamide floating tablet was HPMC K100LV 44.29 mg and Carbopol 940 15.71 mg, with desirability value 0.989.

KEYWORDS: *Carbopol, floating tablet, glibenclamide, HPMC*

ID 233. Solanum nigrum Polysaccharide Fraction, SN-ppF3-induced M1 Classical Signaling Pathway in RAW 264.7 macrophages cells

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Introduction: The polysaccharide fraction SN-ppF3 isolated from *Solanum nigrum* was proven to have indirect anticancer property through its immunomodulatory capability by M1 classical activation of RAW 264.7 murine macrophages cells. However, the specific cellular pathway initiated has not been elucidated. **Objective:** We predicted the possible cellular pathway induced when RAW 264.7 cells were treated with SN-ppF3. **Materials and Methods:** Macrophage cells were treated with SN-ppF3 for 24 hours and microscopic observation were carried out. Pinocytosis analysis was performed to validate macrophages activation, and also to serve as cytotoxicity evaluation. In order to predict the possible activation pathway, SN-ppF3-treated cell lysate was subjected to ELISA analysis. **Results:** Microscopic observation showed an obvious alteration toward cells morphology and pinocytosis activity was significantly increased ($n=3$, $p<0.05$). In response to the treatment, several phosphorylated proteins such as I κ B- α , p38, and NF- κ B p65 were significantly up-regulated ($n=3$, $p<0.05$). **Conclusion:** The present study suggested that SN-ppF3 could activate RAW 264.7 macrophage cells by M1 classical polarization through NF- κ B pathways which closely similar to the pathway induced by LPS.

KEYWORDS: *Cell signaling; Immunomodulation, macrophages, NF- κ B, plant polysaccharide, solanum nigrum*

ID 234. Synthesis and Investigation for Anticancer and Antibacterial Activities of Novel N²,N⁹-Benzylated- β -carbolineum Bromate Derivatives

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Introduction: β -carbolines constitute a vast group of indole alkaloids and exhibit various biochemical effects and pharmacological properties. **Objectives:** To synthesise, characterise and evaluate a series of novel N²,N⁹-benzylated- β -carbolineum bromate derivatives against *in vitro* antibacterial and cytotoxic activities against cancer cell lines. **Materials and Methods:** A novel series of β -carbolines were synthesized from L-tryptophan through the Pictet-Spengler reaction and oxidation of K₂Cr₂O₇ by a sequential one-pot synthesis method then followed by N²,N⁹-benzylated using different types of benzyl bromides with good yield (>70%). All the synthesized compounds were investigated by the disk diffusion and evaluated for *in vitro* cytotoxicity against Hela, HT-29, Hep G2 and K562 cell lines by using MTT assay. **Results:** N²,N⁹-benzylated- β -carbolineum bromate derivatives exerted promising anticancer activities with IC₅₀ values between 0.01–4 μ M when compared to doxorubicin (DOX) which was employed as a the positive control (0.77 μ M). Additionally, all β -carboline derivatives displayed moderate antibacterial activities against tested bacterial strains. **Conclusion:** The result suggested that novel N²,N⁹-benzylated- β -carbolineum bromate derivatives could potentially be developed as a novel anticancer agent.

KEYWORDS: L-Tryptophan, β -carboline, N²,9-benzylated- β -carboline derivatives, Anticancer, Antibacterial activities

ID 235. Utilization Review of Antihypertensive Agents at an Outpatient Pharmacy Setting of a Private Hospital, Selangor, Malaysia

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Introduction: Drug utilization review of antihypertensive agents is regularly conducted to monitor the prescribing trends. **Objectives:** The objectives of this study were to

describe the drug utilization pattern of antihypertensive agents in the outpatient setting of a private hospital and to determine the defined daily dose (DDD) used by the private hospital in comparison to WHO DDD. **Method:** This is a retrospective study using pharmacy dispensing record. Inclusion criteria were prescriptions issued in 2017, patients more than 18 years. The DDD was calculated for each anti-hypertensive drugs prescribed which was then compared with WHO DDD. Medicine prices were also analysed. **Results:** From the total outpatient prescriptions in 2017, 200 prescriptions were chosen randomly using SPSS software. Based on the prescription analysed, the mean number of drugs prescribed per prescriptions was 3.89 (SD: 2.37). Beta blockers are the most commonly prescribed group of anti-hypertensives (37%). Bisoprolol 5mg (9%) and furosemide 40mg (8.7%) were those drugs taken by most patients in this study. Out of 330 drugs prescribed, 76% of them were non-fixed dose combination formulations. Of note, DDD of the 14% and 39% of the anti-hypertensive drugs analysed complied with and of doubled of the WHO DDD, respectively. Out of 330 anti-hypertensive drug products prescribed, 76% of them were non-FDC drugs. **Conclusion:** Beta blockers is still commonly prescribed. Compared with similar studies from the last five years, prescribing of newer anti-hypertensive drugs increased, as evidenced by certain FDC products doubled the DDD value recommended by WHO.

KEYWORDS: Cardiovascular diseases, defined daily dose, prescribing pattern, pharmacoepidemiology, telmisartan

ID 237. Exploring the Healthcare Professionals' Experience of Interdisciplinary Collaboration in the Medical Department of a General Hospital in Malaysia: A Qualitative Study

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Introduction: To cater for the complex healthcare demands in Malaysian public hospitals, healthcare professionals (HCPs) have to collaborate. To date, there is a lack of studies regarding this collaboration in Malaysia. **Objectives:** This study aimed to explore the knowledge and experience of interprofessional collaboration in the Medical Department, Hospital Tuanku Fauziah. **Materials and Methods:** Four focus group discussions (FGDs) were conducted in May 2017. Each FGD consisted of a medical specialist, a medical officer, a nurse manager/charge nurse, a staff nurse, a

senior and a junior clinical pharmacist. Participants were recruited using purposive sampling (nomination by heads of department). FGDs were carried out in English but responses in the Malay language were accepted and translated into English. All FGDs were audio-recorded, transcribed and subjected to inductive thematic analysis. **Results:** In the theme of role clarity, most participants agreed that the doctors lead the patient management, while the nurses are responsible for monitoring, ambulating and drug administering. However, some participants did not know the role of pharmacists in details. Most participants claimed effective collaboration did exist but was inadequate. Barriers to effective collaboration were poor communication skills, lack of communication, staff and time. Interprofessional collaboration might be facilitated with regular discussions between different departments. Most participants acknowledged the medication therapy adherence clinic (MTAC) services by pharmacists but did not know much about it. **Conclusion:** The roles of each HCP, especially pharmacists, should be actively promoted among other HCPs to prevent overlapping of tasks and human resource wastage.

KEYWORDS: Focus groups, intersectoral collaboration, pharmacists, qualitative research

ID 239. The Effect of Pegagan Ethanolic Extract (Centella asiatica L) Self-Nanoemulsifying Drug Delivery System (SNEDDS) in the Development Of Zebrafish Embryos (Danio rerio)

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Introduction: The pegagan is a traditional medicine with the three major bioactive properties of triterpenoid, steroids, and saponin. It has the properties of antioxidant, antistress, and wound healing. Pegagan extract was made in Self-Nano emulsifying Drug Delivery System (SNEDDS) to overcome the problem of pegagan extract that has a low solubility level on water. **Objectives:** The aim of this study was to observe the effect of pegagan ethanolic extract SNEDDS in the development of zebrafish embryo. **Materials and methods:** This study used 5 sets of zebra embryos which will be presented by three sets of SNEDDS extracts with different concentrations, 40µg, 20µg, 10µg, 5µg, and 2.5µg, a set of positive controls ((3.4-DCA 4mg / L) one control set (dilution water) and solvent control (SNEDDS without extract) conducted for 96 hours with observations every 24 hours. The parameters observed were embryonic coagulation, formation of somites, and

detachment of the tail-bud part of the yolk, pulse heart. **Results:** The result showed that in 96 hours the 40 ppm concentration caused 55% highest mortality. At the 40 ppm concentration a growth disorder in the embryo with the absence of the somit causing no release of tailbud from the yolk, thereby causing death in the embryo. **Conclusion:** Pegagan ethanolic extract SNEDDS 40 ppm can affect the development of zebrafish embryo.

KEYWORDS: *Centella asiatica L, pegagan, SNEDDS, zebra fish*

ID 240. Development of Novel Anti-Cancer Agent Targeting Angiogenesis in Colorectal Cancer

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Introduction: Computer-aided drug design techniques were adopted to design a series of novel (E)-N-(N-(benzoyloxybenzylidene)-5-chloro pyrimidine-2-amine) as VEGFR and c-MET kinase inhibitors. **Objectives:** To design new chemical entities for dual kinases inhibitors action (VEGFR and c-MET), to synthesis and perform spectral analysis (IR, ¹H, ¹³C NMR, Mass spectra), and to screen the compounds for their proposed dual kinase inhibitor activity against COLO-205 and HT-29 cell lines. **Materials and Methods:** The designed compounds were synthesized to afford the desired series followed by evaluating their *in vitro* anti-cancer activities. The reaction was carried out by microwave assisted synthesis method. Synthesized compounds were characterized by standard methods of spectroscopy after purification. **Results:** Among the synthesized compounds, K-1, K-2, K-3, K-4, K-5, K-6, K-7 and K-8 were found to show potent cytotoxic against receptor on COLO-205 cell line, and K-3, K-4 and K-5 on HT-29 cell line. The *in-vitro* anti-cancer activity result showed that the compounds have protuberant affinity toward VEGFR and c-MET receptors as standard drug pazopanib. **Conclusion:** The above results revealed that (E)-N-(N-(benzoyloxybenzylidene)-5-chloro pyrimidine-2-amine) hybridized with various heterocyclic scaffolds could be a potential anti-cancer agent.

KEYWORDS: *Colorectal cancer, c-MET, docking, in-vitro, VEGFR*

ID 241. A Text Mining Analytics on Online Forum Medical Queries among Parents with Diabetic Children

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Introduction: Recent research shows how the advancement of Internet has changed how parents seek health information for their children in online forums and social media. This includes parents with children that suffer from chronic diseases, such as diabetes. However, little is known on the extent to which the Internet is being used to obtain health-related information and the common concerns raised. **Objectives:** To analyse the topical context of the public conversation and discussion on online forum among parents with diabetic children. **Materials and Methods:** Text mining technique was used to examine a dataset that contains granular user posts on online health parenting forum from July 2015 to March 2019. **Results:** The result of text mining shows that among the key information being sought were the details available non-medical treatments and social supports. **Conclusion:** The research implications of our results would help medical practitioners and policy maker to design appropriate supports for parents and community in preventing and managing diabetic as chronic disease.

KEYWORDS: *Children, diabetic, health information seeking, online forum, parent*

ID 242. Evaluation of Physical Activity Levels of Type II Diabetic Patients among the Public of Selangor, Malaysia

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Introduction: Type 2 Diabetes mellitus (T2DM) has become a major public health concern worldwide with increasing prevalence in Malaysian adults. **Objectives:** This study aimed to evaluate the physical activity level (PAL) of diabetic individuals among the public of Selangor Malaysia and the associated socio-demographic factors. **Materials and Methods:** A cross-sectional study of 396 adults with T2DM was carried out at public area in Selangor state using convenience sampling through self-administered questionnaire. Sociodemographic characteristics data of the participants was collected. A validated International Physical Activity Questionnaire (IPAQ) was used to obtain the weekly PAL of the study participants. **Results:** The study results showed that 12.1% (n=48) of the participants had low PAL, 71.2% (n=282) had moderate PAL and 16.7% (n=66) had high PAL respectively. Gender, age, level of income, marital status and occupational status

were significantly ($p < 0.05$) associated to PAL. Most of the respondents are physically more active during working hours. Findings depicted that participants preferred walking compared to doing moderate and vigorous physical activity. Low PAL was found to be linked with the older age group, female gender, those who are not working or housewives, low income and unmarried. Whereas high PAL associated with those who are working, married, male, age in between 40 to 49 years old and with middle class income. **Conclusion:** Moderate PAL found among majority of the participants. However, there is a need to promote high PAL among diabetic individuals which probably help to achieve better glycemic control and improved quality of life.

KEYWORDS: Malaysia, physical activity level, selangor, type II diabetes mellitus

ID 243. Evaluation of Vancomycin Trough Steady State Concentration and Associated Clinical Outcome in Methicillin Resistant Staphylococcus Aureus Bacteremia Patients

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Introduction: Vancomycin, a narrow therapeutic index antibiotic is susceptible extensively for gram-positive bacteria and requires therapeutic drug monitoring. Sub therapeutic levels of vancomycin is associated with vancomycin resistant *Enterococci* which occurs due to overdose/ underdose or prolonged usage of vancomycin that eventually leads to treatment failure. **Objectives:** This study aims to evaluate the trough steady state concentration of vancomycin, treatment outcomes and associated demographics among inpatients having methicillin resistant staphylococcus aureus (MRSA) induced infection and treated with vancomycin. **Materials and Method:** Cross-sectional retrospective study was conducted at tertiary care setting using patient medical records (PMRs). Sample size was calculated based on the prevalence (7.37%) of MRSA infections in Malaysia. Data was collected from PMRs registered during January 2014 to December 2015 by employing universal sampling technique. **Results:** Out of total 100 patients 80% were males and majority were Malay. Trough steady state concentration of most patients (62%) observed with sub-therapeutic range (< 10.4 umol/L) on recommended initial dosing and for subsequent dosage adjustments. Number deaths reported were 34%. Elevated white blood cells had significantly ($p = 0.00$) reduced from 46% to 14% following vancomycin therapy. However, 34% of the patients were deceased during the hospitalisation and 23% of patient's culture and sensitivity tests showed growth other than MRSA even after therapy

with vancomycin. **Conclusion:** The trough steady state concentration shows that despite using the standard initial dosing determination, majority of trough level achieved is not within the desirable therapeutic range. Hence, a further study to optimise vancomycin therapy is essential for patient safety and treatment efficacy.

KEYWORDS: Methicillin-resistant staphylococcus aureus (MRSA), trough concentration, vancomycin

ID 244. Factors Associated with Disease Progression among Breast Cancer Patients Treated with Endocrine Therapy: A 5-Year Follow-up Study

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Introduction: Endocrine therapy (ET) has shown clinical benefits for hormone receptor (HR)-positive breast cancer (BCa) patients. Following ET initiation, it is important to monitor patients' response to treatment by assessing disease regression or progression. **Objective:** The study aims to identify the factors associated with disease progression one year after ET initiation in a sample of HR-positive BCa patients at Hospital Sultanah Nur Zahirah (HSNZ), a public hospital in Terengganu, Malaysia. **Materials and Methods:** BCa patients were identified from the Cancer Registry of the Terengganu State Health Department. BCa patients who were female, aged ≥ 18 years old, diagnosed with HR-positive BCa during the period from 2011 - 2014, prescribed with at least one type of ET, and under medical follow up at HSNZ were included. Electronic medical records of patients were reviewed for socio-demographic and clinical data. Disease progression that occurred in the second to fifth year after BCa diagnosis was recorded. Adherence was measured by calculating the medication possession ratio. **Results:** Overall, 103 BCa patients were included in the study. After one year of ET initiation, 31.1% (32/103) of patients had disease progression. Late stage BCa, distant metastasis at diagnosis, non-adherence to ET in the first year of treatment, and a history of complementary and alternative medicine (CAM) use were associated with disease progression. **Conclusion:** Adherence to ET should be emphasized in BCa patients. Moreover, pharmacists and physicians should be vigilant about CAM use in BCa patients. There is also a need to educate women to seek early treatment for BCa.

KEYWORDS: Breast cancer, disease progression, endocrine therapy