The 3rd PharmCare Symposium 2026

ABSTRACTS

ORAL PRESENTATIONS

PC_USM_02 (ORAL)

DEVELOPMENT AND EVALUATION OF THE AR-PRISE PROTOCOL: A PHARMACIST-LED EDUCATIONAL INTERVENTION FOR ADULT ALLERGIC RHINITIS MANAGEMENT

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Background: Allergic rhinitis (AR) affects 10–30% of adults globally, often characterized by suboptimal symptom control and poor adherence to intranasal corticosteroids (INCS). In Malaysia, standardized pharmacist-led educational intervention remains scarce, hindering optimal patient care and clinical outcomes.

Objective: To develop and evaluate the AR-PRISE (Allergic Rhinitis Pharmacist-led Educational) protocol regarding its impact on patient knowledge, symptom control, INCS adherence, and health-related quality of life (QoL).

Methods: This three-phase study involved: (1) protocol development using a modified Delphi process with an interprofessional expert panel; (2) conversion of protocol content into audiovisual animations, validated for understandability and actionability among 79 patients; and (3) a randomized controlled trial with 154 adults. The intervention group received the AR-PRISE protocol, while the control group received usual care. Outcomes were measured over 180 days assessing INCS knowledge, nasal symptoms via Total Nasal Symptom Score (TNSS), diary-based INCS adherence, and EQ-5D-5L for QoL.

Results: Phase 1 achieved consensus on 130 education and 43 counseling items. Phase 2 video animations exceeded the 70% threshold for patient comprehension. In Phase 3, the intervention group showed significantly better TNSS ($p < 0.05$) and higher QoL scores ($p < 0.05$) than controls. The intervention group exhibited milder AR severity and significantly fewer INCS side effects (Relative Risk = 1.815 for the control group). Knowledge and adherence levels did not differ significantly between groups.

Conclusion: The AR-PRISE protocol effectively improves symptom control and QoL. These findings support integrating standardized, pharmacist-led educational interventions into Malaysian clinical settings to optimize AR management.

Keywords: Rhinitis, Allergic; Pharmacists; Patient Education; Quality of Life.

PC_USM_05 (ORAL)

OPTIMISATION OF HIGH-DOSE RIFAMPICIN THERAPY FOLLOWING BILIRUBIN-PREDOMINANT ANTI-TUBERCULOSIS DRUG-INDUCED LIVER INJURY: A CLINICAL PHARMACIST-LED CASE REPORT

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Background: High-dose rifampicin has been proven to improve treatment outcomes in pulmonary tuberculosis. However, dose intensification should be guided by objective treatment response (clinical, microbiological and radiological) together with patient-specific risk factors rather than baseline disease severity alone. This case highlights pharmacist-led optimisation of anti-tuberculosis therapy through personalised medication management.
Objective: To describe pharmacist-led optimisation of high-dose rifampicin therapy and individualised management of anti-tuberculosis drug-induced liver injury (TB-DILI).
Case Summary: A 46-year-old man with smear-positive pulmonary tuberculosis, severe malnutrition (BMI 14.7 kg/m²) and hypoalbuminemia (24 g/L) was initiated on standard HRZE therapy before rifampicin was intensified to 750 mg/day (18.75 mg/kg/day) because of extensive baseline pulmonary disease without interval reassessment of clinical, microbiological or radiological response. Severe malnutrition and hypoalbuminemia were recognised as important risk factors for hepatotoxicity, prompting recommendations to maintain standard-dose rifampicin with serial liver function monitoring; however, these were not accepted. Nine days later, bilirubin-predominant mixed hepatocellular-cholestatic TB-DILI developed (ALT 235 U/L; total bilirubin 80 µmol/L), necessitating withdrawal of hepatotoxic agents.
Discussion: An interim ethambutol-streptomycin-levofloxacin regimen was recommended during treatment interruption to maintain anti-mycobacterial activity but was not accepted. Repeat chest radiography subsequently demonstrated worsening consolidation and sputum smear remained positive, highlighting the potential consequence of interrupted therapy without interim antimicrobial coverage. Following biochemical recovery, sequential rechallenge using full-dose isoniazid before rifampicin with intensive liver function monitoring was recommended based on the bilirubin-predominant cholestatic injury phenotype. This approach was accepted and successfully restored first-line anti-tuberculosis therapy without recurrent hepatotoxicity.
Conclusion: High-dose rifampicin should be individualised according to objective treatment response and patient-specific risk factors rather than baseline disease severity alone. This case highlights the importance of maintaining effective interim anti-tuberculosis therapy during TB-DILI and individualising rechallenge to preserve first-line treatment while minimising recurrent hepatotoxicity.

Keywords: Pulmonary tuberculosis; High-dose rifampicin; Drug-induced liver injury; Clinical pharmacy practice

PC_USM_07 (ORAL)

SAFETY AND CLINICAL EFFECTIVENESS OF DEXAMETHASONE IN HOSPITALIZED ADULTS WITH COVID-19: A TWO-PHASE OBSERVATIONAL COHORT STUDY

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Background: Dexamethasone is recommended for hospitalized COVID-19 patients requiring respiratory support; however, uncertainties remain regarding its safety, effectiveness, and optimal dosing in high-risk populations.

Objective: To evaluate the safety and effectiveness of dexamethasone in hospitalized COVID-19 patients and assess whether outcomes differed by diabetes status, age, and dose.

Methods: A two-phase observational study was conducted at a tertiary hospital in KSA. Phase I retrospectively included 738 patients (370 dexamethasone; 368 controls) to evaluate predefined in-hospital safety and effectiveness outcomes. Phase II prospectively followed 459 discharged patients for three months to assess predefined post-discharge outcomes. Multivariable regression, Kaplan–Meier survival, interaction, and dose-stratified analyses were performed separately for each phase.

Results: During hospitalization (Phase I), dexamethasone was associated with higher recovery (86.8% vs 79.3%; OR=1.71, P=0.007) that attenuated after adjustment (aOR=1.63, P=0.066), faster recovery (median 7 vs 10 days; P<0.001), lower ICU admission (55.7% vs 66.6%; aOR=0.51, P=0.001), and shorter hospitalization (11.10 ± 7.31 vs 14.29 ± 6.56 days; P<0.001). In-hospital hyperglycemia was comparable between groups (38.1% vs 40.5%; aOR=0.96, P=0.835), but treatment effects differed by diabetes status (interaction P=0.001). Compared with 4–6 mg/day, higher doses provided no consistent additional benefit. During Phase II, dexamethasone was associated with lower COVID-19-related readmission (4.2% vs 10.3%; aOR=0.40, P=0.025), without association with new-onset diabetes or HbA1c.

Conclusion: Dexamethasone improved clinical in-hospital outcomes without increasing in-hospital hyperglycemia, gastrointestinal bleeding, or post-discharge metabolic complications. Differential responses by diabetes status and age support individualized monitoring, whereas dose escalation above 6 mg/day did not confer additional benefit.

Keywords: COVID-19; Dexamethasone; Diabetes mellitus; Older adults; Clinical outcomes.

PC_USM_08 (ORAL)

MAPPING THE SCIENTIFIC LANDSCAPE OF BIPOLAR DISORDER AND HYPOTHYROIDISM: A BIBLIOMETRIC AND NETWORK ANALYSIS (2015 – 2025)

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Background: Bipolar disorder and hypothyroidism are clinically associated, particularly through lithium-induced thyroid dysfunction and the influence of thyroid hormones on mood regulation. The evolution of research themes, collaborative networks, influential publications, and emerging scientific priorities remains unclear. A comprehensive bibliometric analysis is therefore warranted to synthesise the global research landscape and identify future research directions.
Objective: To evaluate global research trends, publication characteristics, citation impact, influential contributors, and emerging research themes on bipolar disorder and hypothyroidism from 2015 to 2025.
Methods: A bibliometric analysis was conducted by extracting data from Scopus. Publications published between 2015 and 2025 were retrieved using predefined search criteria. Data were cleaned using OpenRefine, analysed using biblioMagika®, and VOSviewer to generate co-occurrence networks, overlay visualisations, and density maps.
Results: A total of 403 publications were identified. Annual publication output increased from 33 publications in 2015 to 52 in 2024. The United States was the most productive and influential contributor. Psychiatric journals dominated publication output, while clinical guidelines and review articles received the highest citations. Network analyses identified four major research themes: bipolar disorder clinical features, thyroid dysfunction, lithium and pharmacotherapy, and emerging mechanistic approaches, including genetics and Mendelian randomisation. Research trends shifted from descriptive clinical observations towards multidisciplinary, epidemiological, and mechanistic investigations.
Conclusion: Research linking bipolar disorder and hypothyroidism has expanded substantially over the past decade. However, important gaps remain, particularly in longitudinal, mechanistic, and interventional studies, highlighting the need for further research to clarify the role of hypothyroidism in bipolar disorder

Keywords: Bipolar disorder, Hypothyroidism, Lithium, Bibliometric analysis

PC_USM_09 (ORAL)

PATIENT-REPORTED OUTCOMES OF PACLITAXEL VERSUS DOCETAXEL FOLLOWING DOXORUBICIN-CYCLOPHOSPHAMIDE IN IRAQI WOMEN WITH INVASIVE DUCTAL CARCINOMA: A PROSPECTIVE MULTICENTER STUDY

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Background: Neoadjuvant taxane chemotherapy following doxorubicin and cyclophosphamide (AC) is a well-established treatment for breast cancer; however, comparisons of patient-reported outcomes (PROs) between weekly paclitaxel and three-weekly docetaxel remain limited, particularly in the Iraqi population.
Objective: To compare PROs, including quality of life (QoL), treatment convenience, treatment-related concerns, treatment satisfaction, and symptom burden, between weekly paclitaxel and three-weekly docetaxel in Iraqi women with unilateral Luminal A invasive ductal carcinoma.
Methods: In this prospective multicenter study, 243 women from two public hospitals in Baghdad (2022–2025) received four cycles of AC followed by either 12 cycles of weekly paclitaxel (n=118) or 4 cycles of three-weekly docetaxel (n=125). PROs were evaluated using validated questionnaires and compared between groups using t-tests and chi-square tests, with $p<0.05$ considered significant.
Results: Before taxane chemotherapy, both groups were well-matched at baseline across demographic and clinicopathological characteristics. Upon completing all cycles, weekly paclitaxel was associated with significantly better QoL (18.7±3.3 vs. 15.8±3.7), convenience (10.9±2.3 vs. 8.6±2.6), satisfaction (14.7±2.9 vs. 11.8±3.2), and symptom tolerability (84.9±11.6 vs. 71.5±12.8), alongside fewer concerns (13.8±3.4 vs. 16.9±3.8); all $p<0.001$. Low QoL was reported by fewer patients receiving paclitaxel than docetaxel (33.1% vs. 53.6%, $p=0.001$). Peripheral numbness/tingling was the sole outcome favoring docetaxel, reflecting more severe neuropathy among paclitaxel-treated patients (2.7±1.0 vs. 4.1±0.8, $p<0.001$).
Conclusion: Weekly paclitaxel was associated with more favorable PROs than three-weekly docetaxel, demonstrating better QoL, convenience, satisfaction, and symptom tolerability with fewer concerns, although peripheral neuropathy remains its primary drawback.

Keywords: Breast Cancer; Neoadjuvant Chemotherapy; Paclitaxel; Docetaxel; Patient-Reported Outcomes

PC_USM_14 (ORAL)

PRAGMATIC TRIAL OF BRIEF VERSUS INTENSIVE PHARMACIST-LED SMOKING CESSATION IN HOSPITALIZED SMOKERS

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Background: Hospitalization provides a valuable opportunity for smoking cessation. However, the most practical pharmacist-led smoking cessation approach for hospitalized smokers in resource-limited settings remains uncertain.
Objective: To compare smoking cessation outcomes between brief and intensive pharmacist-led smoking cessation interventions among hospitalized smokers.
Methods: A pragmatic, open-label randomised controlled study was conducted among adult smokers admitted to medical and cardiology wards at Hospital Tengku Ampuan Afzan, Malaysia between October 2022 and October 2023. Participants were randomised using computer-generated block randomisation to receive either a brief (approximately 10 minutes) or intensive (approximately 40 minutes with educational visual aids) structured intervention. Follow-ups were conducted at week 1, 4, 12 and 24. Prolonged abstinence at 6 months and 7-day point prevalence abstinence at each follow-up were assessed. Surviving participants who missed follow-up were considered smokers.
Results: A total of 488 participants were recruited with comparable baseline characteristics between groups. At 6 months, prolonged abstinence did not differ significantly between the intensive and brief groups (32.9% vs 36.8%; p=0.377). Biochemically-validated abstinence using exhaled carbon monoxide was similar (12.9% vs 13.6%; p=0.824). No significant differences were observed in 7-day point prevalence abstinence at any follow-up time point.
Conclusion: Intensive structured pharmacist-led smoking cessation intervention was not superior to a brief structured intervention in achieving smoking abstinence at 6 months. A brief structured approach may be more practical for implementation in resource-limited hospital settings.

Keywords: Hospitalized smokers, smoking cessation, Malaysia

PC_USM_19 (ORAL)

Trends and Patterns in Pediatric Outpatient Prescribing: A Systematic Review Guided by WHO Core Indicators

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Abstract

Background: Irrational medicine use is a global challenge, particularly in children, threatening patient safety and clinical outcomes.

Objective: This review aims to synthesize the literature on WHO indicators and to identify strategies to improve the rational use of medicines in children.

Methods: This systematic review followed the PRISMA 2020 guidelines and was registered with PROSPERO (CRD420251037848). Searches in PubMed, Web of Science, Scopus, and ScienceDirect identified observational studies published in English between January 2000 and November 2025 that examined drug use in pediatric outpatient settings using WHO prescribing indicators. Quality was assessed using the JBI tool, followed by narrative synthesis.

Results: A total of 16 cross-sectional studies were analyzed, involving 9,602 prescriptions or encounters; 56.3% were high quality and 43.7% moderate. Average medicines prescribing (1.80-3.80) and antibiotic prescribing (3%-84%) largely exceeded WHO optimal targets (1.6-2.0 and <30%, respectively). Injection prescribing (0.006%-25.3%) generally aligned with WHO guidelines (<24.1%). Generic prescribing (0%-100%) and adherence to the EML (15%-100%) varied widely, with significant differences across healthcare levels. Prescribing practices exhibited considerable heterogeneity across primary, secondary, and tertiary care levels, geographic regions, and facility ownership (public vs. private).

Conclusion: Prescribing indicators deviate from WHO standards, highlighting problems such as polypharmacy, overuse of antibiotics, low rate of generic prescribing, and poor adherence to essential medicines lists. Addressing these challenges requires urgent, comprehensive actions, including polypharmacy and antimicrobial stewardship, prescriber education, clinical decision support, and ongoing monitoring. Implementing these strategies will improve medicine use, reduce harm, combat resistance, and support the WHO Medication Without Harm initiative.

Keywords: WHO prescribing indicators; Pediatric prescribing; Rational drug use; Antimicrobial stewardship; Generic prescribing; Essential medicines list; Polypharmacy; Pediatric outpatients

PC_USM_29 (ORAL)

SYSTEMATIC REVIEW AND META-ANALYSIS OF VANCOMYCIN TROUGH CONCENTRATION TARGETS AND CLINICAL OUTCOMES IN NEONATES

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Background: Therapeutic drug monitoring (TDM) of vancomycin in the neonate remains challenging due to a high vancomycin's pharmacokinetics variation degree during early infancy which complicates effective therapeutic levels and minimizes the toxicity risk.
Objectives: This systematic review and meta-analysis compared the clinical effectiveness and safety of high with low vancomycin trough levels in neonates.
Methods: A systematic literature search of PubMed, Scopus, Web of Science and Cochrane CENTRAL databases from the inception of the databases until July 21st 2025, using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. Randomized controlled trials and observational cohort studies comparing high vancomycin levels (≥10 µg/mL) and low vancomycin levels (<10 µg/mL) were included. The primary outcome was composite clinical response and secondary outcomes were nephrotoxicity, hepatotoxicity, ototoxicity and the clearance of microbes. Pooled risk ratio with 95% confidence intervals was computed using random effects model.
Results: A total of 11eleven studies with 827 neonates fulfilled the inclusion criteria. The composite clinical response was significantly improved with higher vancomycin trough levels (risk ratio = 1.29, 95% confidence interval: 1.08-1.54; p = 0.005), but also included nephrotoxicity risk (risk ratio = 3.22, 95% confidence interval: 1.25-8.25; p = 0.02). There were no statistically significant differences for hepatotoxicity, ototoxicity or microbial clearance.
Conclusion: The results suggest that increasing the vancomycin trough levels will be associated with better treatment response but will also significantly increase the nephrotoxicity risk without offering benefit in other clinical outcomes. Therefore, individualized therapeutic drug monitoring and exposure-guided dosing is crucial to optimize neonatal vancomycin treatment.

Keywords: neonates, vancomycin, therapeutic drug monitoring, pharmacokinetics, nephrotoxicity, meta-analysis

PC_USM_15 (ORAL)

IMPACT OF AN EDUCATIONAL PROGRAM ON KNOWLEDGE, ATTITUDE, PRACTICE OF PRE-OPERATIVE SURGICAL SKIN ANTISEPTIC IN SURGICAL SITE INFECTION PREVENTION

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Background: Pre-operative skin preparation using quality of evidence category 1A surgical skin antiseptic is a critical defense against surgical site infections (SSIs). However, clinical translation of evidence-based guidelines is frequently hindered by practice inertia.
Objective: To evaluate the impact of a knowledge-based Continuing Medical Education (CME) on operating theatre (OT) surgical physicians' Knowledge, Attitude, and Practice (KAP) and adherence to 2016 WHO SSI prevention guidelines
Methods: A quasi-experimental, pre-post survey totaled eight CME sessions conducted across six public tertiary Malaysian hospitals. Surgical physicians (N = 122), stratified by seniority, specialization and OT experience, across five dependent variables. Respondents completed a validated KAP questionnaires, administrated online, a pre and post 48-hours after a 30 minutes expert-validated CME. Data evaluated using paired-samples t-tests. A subgroup analyses compared physical face-to-face (n = 86) versus online webinar (n = 36) delivery formats.
Results: Baseline mean percentage scores (MPS) was low for Product Knowledge (53.9%), Practice (54.0%); moderate for Product Efficacy (70.5%), Attitude (69.0%), and SSI Guidelines (66.3%). For post-intervention, improvements in domain mean scores evident in Product Knowledge (+3.55, $p < 0.001$), Product Efficacy (+0.75, $p < 0.001$), SSI Guidelines (+1.37, $p < 0.001$), and Attitude (+1.42, $p < 0.001$). In contrast, Practice domain remained statistically not-significant (+0.46, $p = 0.241$). The online delivery yielded statistically equivalent learning gains compared to physical format ($p > 0.05$).
Conclusion: Knowledge-based CME effectively resolved cognitive and attitudinal gaps, however unable to translate into daily OT practice, highlighting a persistent intention-behaviour split. To bridge this gap, education program must be integrated with a local guidelines' adaptation, leadership endorsement, and continuous reinforcement.

Keywords: Surgical skin antiseptic, Surgical site infections (SSI), CME Educational program, practice inertia, intention-behavioural split.

PC_USM_18 (ORAL)

IMPACT OF LEPTIN AND ADIPONECTIN ON METABOLIC OUTCOMES IN OBESE AND NON-OBESE T2DM: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Background: Obesity in type 2 diabetes mellitus (T2DM) dysregulates adipose-derived hormones and exacerbates insulin resistance, yet differences in key metabolic biomarkers between obese and non-obese T2DM patients have not been systematically quantified across multiple outcomes simultaneously. Such quantification is essential to establish obesity's metabolic burden and guide targeted phenotyping and therapy.
Objective: To quantify differences in serum leptin, adiponectin, HbA1c, and HOMA-IR between obese and non-obese T2DM patients.
Methods: Electronic databases were searched for studies reporting mean (±SD) values of leptin, adiponectin, HbA1c, and HOMA-IR in obese versus non-obese T2DM patients. Standardized mean differences (Hedges' g) were pooled using a random-effects DerSimonian-Laird model. Heterogeneity was assessed with Cochran's Q and I^2 statistics. Publication bias was assessed using Egger's regression test and robustness via leave-one-out sensitivity analysis.
Results: Twelve studies were included; ten provided meta-analysable data. Serum leptin was significantly higher (k=10, N=1,530; g=2.651, 95%CI 1.818–3.485, $p<0.001$; I^2=97.1%) and adiponectin significantly lower (k=6, N=1,545; g=−0.928, p=0.001; I^2=95.8%) in obese T2DM. HbA1c was modestly elevated (k=7, N=1,803; g=0.833, p=0.026; I^2=97.6%). HOMA-IR showed the most consistent elevation (k=5, N=1,842; g=0.980, $p<0.001$; I^2=0.0%). No significant publication bias was detected.
Conclusion: This meta-analysis newly reveals a coherent obese-T2DM pattern: hyperleptinemia, hypoadiponectinemia, modestly elevated HbA1c, and substantially elevated insulin resistance. HOMA-IR elevation was exceptionally consistent across populations (I^2=0.0%), whereas HbA1c differences were modest and ethnicity-dependent, indicating the obese phenotype is dominated by insulin resistance rather than glycaemic deterioration. These findings support metabolic phenotyping prioritising insulin-sensitising strategies and weight reduction in obese patients.

Keywords: Type 2 diabetes mellitus; obesity; leptin; adiponectin; meta-analysis

PC_USM_21(ORAL)

IMPACT OF PHARMACIST-LED INTERVENTIONS ON GLYCEMIC CONTROL AND PATIENT-RELATED OUTCOMES IN T2DM: A SYSTEMATIC REVIEW AND META-ANALYSIS OF RCTS

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Background: Diabetes is a significant non-communicable disease worldwide that requires continuous monitoring and management to prevent complications and preserve quality of life. Effective management depends on a multidisciplinary team, where pharmacists contribute through pharmacological and non-pharmacological interventions.
Objective: This systematic review and meta-analysis examined the impact of pharmacist-led interventions on clinical and patient-centred outcomes in individuals with type 2 diabetes mellitus (T2DM).
Methods: This review followed PRISMA guidelines (PROSPERO: CRD420251060253). A comprehensive search of PubMed, Scopus, Cochrane Library, Web of Science, and Medline was conducted from inception to 30th April 2026. Randomised controlled trials assessing pharmacist-led interventions for clinical and patient-centred outcomes in patients with T2DM were included. Risk of bias was assessed using the Cochrane RoB 2 tool, and data were analysed using RevMan version 5.4.
Results: This review included 20 studies involving approximately 4,000 participants. Interventions were delivered by pharmacists alone or within multidisciplinary teams in hospital settings. Pooled analysis showed significant improvements in HbA1c (8 studies; MD = −0.89%, 95% CI: −1.27 to −0.52; I^2 = 95%; $p < 0.00001$) and fasting blood glucose (5 studies; MD = −27.22 mg/dL, 95% CI: −38.60 to −15.83; I^2 = 89%; $p < 0.00001$). Diabetes-related knowledge improved in 3 of 4 studies reporting this outcome, medication adherence improved in all 11 studies, and quality of life improved in 9 of 11 studies. Risk of bias was high in 7 studies, some concerns in 12, and low in 1.
Conclusion: Pharmacist-led interventions significantly improved glycaemic control and patient-related outcomes in T2DM. Integrating clinical pharmacists into multidisciplinary diabetes care teams may enhance patient knowledge, treatment adherence, and quality of life.

Keywords: clinical pharmacy; glycemic control; health literacy; medication adherence; type 2 diabetes mellitus.

PC_USM_23 (ORAL)

EFFECTIVENESS, SAFETY, AND TOLERABILITY OF GLP-1 RECEPTOR AGONISTS AND THEIR PREDICTORS AMONG MALAYSIAN PATIENTS WITH TYPE 2 DIABETES MELLITUS

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Background: Although glucagon-like peptide-1 receptor agonists (GLP-1 receptor agonists) have demonstrated efficacy in randomized trials, real-world evidence among Malaysian patients with type 2 diabetes mellitus remains limited.
Objective: To evaluate the real-world effectiveness, safety, and tolerability of GLP-1 receptor agonists and identify predictors of favourable therapeutic response and treatment-related adverse effects.
Methods: This retrospective cohort study included 119 adults with type 2 diabetes mellitus treated with GLP-1 receptor agonists at Hospital Universiti Sains Malaysia. Changes in body weight, body mass index (BMI), HbA1c, fasting blood glucose, and lipid profile were evaluated at baseline, 3 months, and 6 months using the Wilcoxon signed-rank test. Multivariable logistic regression identified predictors of therapeutic response and adverse effects.
Results: At 6 months, significant median reductions were observed in body weight (-3.5 kg), BMI (-1.52 kg/m²), HbA1c (-2.8%), fasting blood glucose (-2.6 mmol/L), total cholesterol, LDL cholesterol, and triglycerides (all $p<0.001$), while HDL cholesterol showed no significant change. Overall, 83.2% achieved a favourable therapeutic response. Treatment-related adverse effects occurred in 28.6%, predominantly nausea and vomiting. Higher baseline HbA1c independently predicted favourable response (OR 2.848; 95% CI 1.780-4.556; $p<0.001$), whereas higher baseline fasting blood glucose predicted adverse effects (OR 1.252; 95% CI 1.028-1.525; $p=0.025$).
Conclusion: GLP-1 receptor agonists demonstrated favourable real-world effectiveness and an acceptable safety profile among Malaysian patients with type 2 diabetes mellitus. Baseline HbA1c and fasting blood glucose may support individualized treatment strategies.

Keywords: GLP-1 receptor agonists; Type 2 diabetes mellitus; Real-world evidence; Treatment response; Safety

R1_PC_USM_25 (ORAL)

IMPACT OF EDUCATIONAL INTERVENTIONS ON PARENTAL KNOWLEDGE, ATTITUDES, AND PRACTICES REGARDING JUDICIOUS ANTIBIOTIC USE IN CHILDREN: A LONGITUDINAL PROSPECTIVE STUDY

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Background: Antimicrobial resistance (AMR) is a major public health concern driven by inappropriate antibiotic use. Parents play an important role in administering antibiotics to children; therefore, improving their knowledge, attitudes, and practices (KAP) is essential to support appropriate use.
Objective: To evaluate the effectiveness of sequential brochure- and video-based educational interventions in improving parents' KAP regarding antibiotic use and AMR in children, and to assess the influence of sociodemographic factors.
Methods: A longitudinal interventional study involving 561 parents in Kedah, Malaysia, was conducted from June 2024 to December 2025. Parents of children aged <12 years were recruited through convenience sampling. Participants completed a validated self-administered questionnaire at baseline, two months after a brochure intervention, and two months later after a 7–9-minute educational video delivered via WhatsApp. Changes in KAP scores were analysed using repeated-measures ANOVA, with additional analyses examining sociodemographic associations.
Results: All KAP domains improved significantly over time ($p<0.001$). Knowledge scores increased from 66.51% at baseline to 72.77% after the brochure and 81.49% after the video. Attitude scores increased from 59.73% to 63.76% and 72.83%, while practice scores increased from 59.18% to 62.99% and 71.07%, respectively. Large intervention effects were observed for knowledge ($\eta^2=0.526$), attitude ($\eta^2=0.492$), and practice ($\eta^2=0.441$). Education level and residence were associated with selected KAP outcomes.
Conclusion: Sequential brochure- and video-based education significantly improved parental KAP regarding appropriate antibiotic use and AMR, supporting repeated educational interventions within antimicrobial stewardship programmes.

Keywords: Antibiotic use, antimicrobial resistance, educational intervention, parents, knowledge, attitude, practice, antimicrobial stewardship.

PC_USM_26 (ORAL)

KNOWLEDGE AND ATTITUDES TOWARDS GERIATRIC PHARMACOTHERAPY AMONG UNDERGRADUATE PHARMACY STUDENTS AT UNIVERSITI SAINS MALAYSIA: A CROSS-SECTIONAL STUDY

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Background: Malaysia's rapidly aging population demands pharmacists who are competent in geriatric pharmacotherapy. Despite increasing emphasis on geriatric education, institution-specific evidence evaluating students' preparedness remains limited. Assessing knowledge and attitudes is essential for identifying curriculum gaps and informing educational improvement.
Objective: To evaluate knowledge and attitudes towards geriatric pharmacotherapy among undergraduate pharmacy students at Universiti Sains Malaysia and determine factors associated with these outcomes.
Methods: A cross-sectional study involving 159 undergraduate pharmacy students was conducted using convenience sampling. Students from all four academic years were recruited through online distribution of a self-administered questionnaire to ensure representation across different stages of pharmacy education. The questionnaire comprised the Geriatric Knowledge Assessment Scale (GKAS) and the University of California, Los Angeles Geriatrics Attitudes Scale (UCLA-GAS). As the data were not normally distributed, non-parametric analyses were performed.
Results and Discussion: Overall knowledge was moderate (median 8/13, IQR 7), although 42.1% of students demonstrated poor knowledge. Attitudes towards geriatric pharmacotherapy were generally favourable (median 43, IQR 6). Academic year was the only factor significantly associated with knowledge ($p<0.001$), suggesting that curricular progression enhances knowledge acquisition. No participant characteristic was associated with attitudes ($p>0.05$). Although knowledge and attitudes were positively correlated ($\rho=0.158$, $p=0.047$), the association was very weak, indicating that favourable attitudes alone do not necessarily translate into adequate geriatric pharmacotherapy knowledge.
Conclusion: Despite favourable attitudes towards older adults, important knowledge gaps remain among undergraduate pharmacy students. These findings support earlier and longitudinal integration of geriatric pharmacotherapy into the undergraduate curriculum to strengthen students' preparedness for the pharmaceutical care of an ageing population.

Keywords: Geriatric pharmacotherapy; Pharmacy education; Knowledge; Attitudes; Undergraduate pharmacy student

PC_USM_30 (ORAL)

AWARENESS AND PREVENTIVE PRACTICES TOWARD HEPATOCELLULAR CARCINOMA PREVENTION AND SCREENING AMONG THE UNIVERSITI SAINS MALAYSIA MAIN CAMPUS COMMUNITY, PENANG, MALAYSIA

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Background: Hepatocellular carcinoma (HCC) is the sixth most common cancer and the third leading cause of cancer-related mortality worldwide. Although HCC is largely preventable through hepatitis B virus (HBV) vaccination, viral hepatitis screening, and surveillance of high-risk individuals, evidence regarding awareness and preventive practices among Malaysian university populations remains limited.
Objective: To assess awareness and preventive practices toward HCC prevention and screening among the Universiti Sains Malaysia (USM) Main Campus population and identify factors associated with awareness and preventive practices.
Methods: A cross-sectional questionnaire study was conducted among students, academic staff, and non-academic staff at Universiti Sains Malaysia (USM) Main Campus, Penang, from April to July 2026. The minimum sample size was 380, calculated using Epi Info™ based on a population of 25,000, 95% confidence level, 5% margin of error, and 50% expected prevalence; 420 participants were targeted to account for non-response. A total of 310 participants completed a Google Forms questionnaire. The instrument was content and face validated by three experts using CVI and FVI and pilot tested on 14 participants. It assessed HCC awareness, preventive practices, barriers, facilitators, and information sources. Data were analysed using Python 3.12 with descriptive statistics, chi-square tests, and multivariable logistic regression; $p < 0.05$ was considered significant.
Results: Poor awareness was observed in 64.8% of participants, while 13.5% and 21.6% demonstrated moderate and good awareness, respectively. Complete HBV vaccination was reported by 17.2% of participants, whereas 30.0% and 31.2% had undergone HBV and HCV testing, respectively. Awareness was significantly associated with age, nationality, ethnicity, and participant category. Higher awareness predicted greater uptake of HBV vaccination, hepatitis testing, and willingness to participate in HCC surveillance. Lack of information was the most frequently reported barrier, while healthcare professionals were the primary source of HCC information.
Conclusion: Awareness and uptake of evidence-based HCC preventive practices remain inadequate among the USM community. Targeted educational programmes, pharmacist-led health promotion, and accessible preventive healthcare services may improve HBV vaccination, viral hepatitis screening, and HCC surveillance.

Keywords: Hepatocellular carcinoma; Awareness; Prevention; Screening; Malaysia

PC_USM_32 (ORAL)

STAKEHOLDER PERSPECTIVES INFORMING THE DESIGN OF COMMUNITY PHARMACIST-LED FALL PREVENTION PROGRAMME FOR OLDER ADULTS IN MALAYSIA: A QUALITATIVE STUDY

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Background: Community pharmacists are well-positioned to provide accessible early fall prevention support for community-dwelling older adults. However, such services are not routinely established in Malaysian community pharmacy practice. Understanding the perspectives of both providers and intended service recipients is essential for designing contextually appropriate support.
Objective: To explore community pharmacists' and older adults' perspectives and identify factors relevant to designing a community pharmacist-led fall prevention programme.
Methods: Two sets of semi-structured interviews were conducted separately with 20 community pharmacists and 20 community-dwelling older adults who had previously used community pharmacy services. Participants were purposively selected using stakeholder-specific eligibility criteria, and recruitment continued until data saturation was achieved separately within each group. Each dataset was analysed separately using an inductive-deductive thematic approach informed by the Capability, Opportunity, and Motivation-Behaviour (COM-B) model.
Results: Findings across the COM-B domains highlighted three priorities for programme design. First, capability involved strengthening pharmacists' fall prevention knowledge and communication skills while addressing older adults' fall risk awareness and communication needs. Second, opportunity required flexible delivery that accommodated pharmacists' workloads and older adults' availability, as well as practical guidance for pharmacists and educational materials for older adults. Third, motivation and engagement could be supported through trusted pharmacist-patient relationships and positive framing of fall prevention. These findings informed pharmacist training and the delivery of interventions through brief risk screening, personalised education including educational materials and guidance for medication review and referral.
Conclusion: Provider and recipient perspectives informed the tailoring of a fall prevention programme for routine community pharmacy practice, including its delivery approach and strategies to support engagement among community-dwelling older adults.

Keywords

Community pharmacists, fall prevention, older adults, COM-B model, qualitative research

POSTER PRESENTATIONS

PC_USM_03 (POSTER)

FEASIBILITY STUDY OF AN EDUCATIONAL MODULE FOR MALAYSIAN CAREGIVERS ON PEDIATRIC ORAL LIQUID MEDICATIONS

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Background: Caregiver knowledge gaps in the administration, measurement, storage, and disposal of paediatric oral liquid medications may contribute to medication errors and adverse events in children. A culturally appropriate educational module may help address these gaps among Malaysian caregivers.
Objective: To assess caregivers' baseline knowledge and evaluate the acceptability, feasibility, and appropriateness of an evidence-based educational module on paediatric oral liquid medications.
Methods / Case summary / Description: A single-group pilot feasibility study was conducted among 43 caregivers of children younger than six years from a kindergarten in Semenyih, Malaysia. Participants completed a pre-intervention questionnaire assessing baseline knowledge of paediatric oral liquid medication management. They subsequently completed the online educational module and a post-intervention questionnaire assessing the module's acceptability, feasibility, and appropriateness. Data were analysed using descriptive statistics.
Results / Outcomes / Discussion: Among 43 participants who completed the pre-intervention questionnaire, the mean knowledge score was 15.0 ± 2.5, corresponding to a moderate knowledge level based on Bloom's cut-off points. In the post-intervention evaluation, all three domains—acceptability, feasibility, and appropriateness—achieved a median score of 5 on a five-point Likert scale, indicating highly favourable perceptions of the module among participants.
Conclusion: The findings identified knowledge gaps in the management of paediatric oral liquid medications among caregivers, despite a moderate baseline knowledge level. The module was deemed acceptable, feasible, and appropriate for Malaysian caregivers. Further research should assess the module's effectiveness in improving caregiver knowledge and medication-management practices.

Keywords: caregivers; paediatric oral liquid medications; educational module; feasibility study

PC_USM_11 (POSTER)

MAPPING TELEMEDICINE AND GAMIFICATION IN MHEALTH FOR ADULT WEIGHT MANAGEMENT

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Background: Mobile health (mHealth) interventions are increasingly used for adult weight management; however, review-level evidence is fragmented across mobile applications, telemedicine, and gamification. This fragmentation limits understanding of how remote clinical support and engagement-enhancing features have been evaluated, either separately or in combination, among adults with overweight or obesity.
Objective: To map existing review-level evidence on digital health interventions for adult weight management and characterize the coverage of telemedicine and gamification components within mHealth interventions.
Methods: A preliminary evidence map was conducted using PubMed, Scopus, and relevant reference lists. Reviews examining mobile applications, eHealth, telemedicine, gamification, and digital lifestyle interventions for adults with overweight or obesity were considered. Data were extracted on review focus, population, intervention characteristics, included study designs, outcomes, and reported limitations.
Results / Outcomes / Discussion: Previous reviews predominantly evaluated mobile applications, eHealth interventions, telemedicine-based care, or gamification as separate approaches or within broad digital health categories. Commonly reported outcomes included body weight, body mass index, lifestyle behavior, adherence, and user engagement. Considerable heterogeneity was observed in intervention components and outcome reporting, while the combined integration of telemedicine support and gamification within mHealth interventions was rarely characterized.
Conclusion: Review-level evidence indicates a gap regarding mHealth interventions that integrate telemedicine and gamification for adult weight management. A focused systematic review of primary studies is warranted to evaluate weight-related outcomes, adherence, and engagement.

Keywords: mHealth; telemedicine; gamification; obesity; weight management

PC_USM_12 (POSTER)

KNOWLEDGE, ATTITUDES, AND PERCEIVED CHALLENGES OF COMMUNITY PHARMACISTS IN PERAK, MALAYSIA, REGARDING MEDICATION THERAPY MANAGEMENT SERVICES FOR OLDER ADULTS

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Background: Older adults are at high risk of polypharmacy and drug-related problems (DRPs), highlighting the need for pharmacist-led interventions such as Medication Therapy Management (MTM). However, structured MTM services remain limited in Malaysian community pharmacy settings. Assessing pharmacists' knowledge, attitudes, and perceived challenges is important to determine their readiness and identify barriers to wider MTM implementation for older adults.
Objective: This study aimed to assess the knowledge, attitudes, and perceived challenges of community pharmacists in Perak, Malaysia, regarding the provision of MTM services for older adults.
Methods: A cross-sectional survey was conducted among 104 licensed community pharmacists practising in Perak, Malaysia. A validated questionnaire was used to assess pharmacists' knowledge, attitudes, and perceived challenges. Data were analysed using SPSS, with descriptive statistics, Chi-square tests, and Spearman's correlation.
Results: Most pharmacists demonstrated good knowledge of MTM services (74.0%), while 16.3% had moderate knowledge and 9.6% had poor knowledge. More than half reported positive attitudes towards MTM services (52.9%), followed by neutral attitudes (46.2%) and negative attitudes (1.0%). Commonly perceived challenges included counselling on therapy monitoring, educating patients on disease management, time constraints, and workload. Knowledge was positively correlated with attitude scores (r_s=0.42, $p<0.01$).
Conclusion: The good knowledge and positive attitudes of community pharmacists in Perak towards MTM services for older adults suggest potential readiness for wider implementation. However, challenges related to workflow integration, training, patient education, time constraints, and workload must be addressed through structured training, supportive policies, and adequate resource allocation.

Keywords: Medication Therapy Management; community pharmacists; older adults; attitudes; perceived challenges

PC_USM_13 (POSTER)

CONCURRENT ILLICIT SUBSTANCE USE AMONG INDIVIDUALS UNDERGOING METHADONE MAINTENANCE THERAPY IN MALAYSIA: A NARRATIVE REVIEW

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Background: Illicit substance use is a global public health concern. The number of illicit drug abusers is increasing in Malaysia. For this issue, the government of Malaysia started the Methadone Maintenance Therapy (MMT) program for harm reduction and to reduce illegal opioid use in 2005. MMT has effectively reduced opioid use and improved quality of life, but the majority of patients are concurrently taking other illicit drugs. Illicit substance use increases the risk of relapse and poor treatment.
Objective: This narrative review aims to identify the types and trends of polysubstance use among patients on MMT during treatment in Malaysia.
Methods: This narrative review article of the existing literature was conducted using a systematic literature search strategy from 2016 to 2026. Original research articles were retrieved from databases, including PubMed, Scopus, Google Scholar, and Web of Science, using the inclusion and exclusion criteria.
Results: In total, 12 studies were selected. The mean age ranged from 37.7 to 46.04 years. Most participants were married (51.7%–61.3%). Secondary education predominated (49.6%–91%). ATS was the common concurrent substance. Continued illicit opioid use was reported. Polysubstance use was highly prevalent (up to 90%). cannabis and ketum were also commonly used alongside other substances.
Conclusion: Polysubstance use, especially ATS and opioids, remains common among Malaysian patients on MMT, particularly in the early to mid-forties and married individuals. Integrated treatment addressing non-opioid drugs is needed. Future research should use longitudinal and mixed methods and evaluate combined MMT with stimulant-specific interventions.

Keywords: illicit substance use, methadone maintenance therapy, concurrent, polysubstance, Malaysia

PC_USM_34 (POSTER)

TOWARD PRECLINICAL PRECISION PHARMACOTHERAPY: DOSE-INFORMED REPURPOSING OF ZOLPIDEM FOR ANXIETY-LIKE BEHAVIOUR IN RATS WITH KAINIC ACID-INDUCED EPILEPSY

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Background: Zolpidem is approved for short-term insomnia, not epilepsy or anxiety. Its GABAA receptor modulation nevertheless provides a rationale for investigating repurposing in epilepsy-associated anxiety.

Objective: To explore the repurposing potential of zolpidem by comparing two doses in a kainic acid (KA)-induced epilepsy rat model with anxiety-like behaviour.

Methods: Twenty-seven male Sprague-Dawley rats were allocated to sham, KA only, KA plus zolpidem 1 mg/kg, KA plus zolpidem 3 mg/kg, zolpidem 1 mg/kg only, or zolpidem 3 mg/kg only groups. Epilepsy was induced using intraperitoneal KA, and zolpidem was administered orally once daily for 14 days. Anxiety-like behaviour was assessed using the open-field test before and after intervention. Hippocampal morphology was evaluated using haematoxylin and eosin staining. After outlier exclusion, 24 animals contributed to the main analyses.

Results: All KA-treated rats reached score 4 on the Modified Racine Scale. Central-zone entries increased after treatment in the KA plus 1 mg/kg ($p<0.01$) and KA plus 3 mg/kg ($p<0.05$) groups, with a larger response at 1 mg/kg. In non-epileptic rats, 3 mg/kg reduced central-zone entries and duration (both $p<0.01$), indicating a potential paradoxical anxiogenic effect. Total distance travelled did not differ significantly. Hippocampal damage was evident after KA, while the KA plus 1 mg/kg group showed less neuronal degeneration than the KA-only and KA plus 3 mg/kg groups.

Conclusion: Zolpidem showed dose- and condition-dependent effects. The lower dose provided a repurposing signal; the higher dose showed less benefit and potential harm. Further precision-dosing research is required.

Keywords: drug repurposing; zolpidem; epilepsy; anxiety; hippocampus

PC_USM_4 (POSTER)

POTENTIALLY INAPPROPRIATE MEDICATIONS IN HOSPITALIZED ELDERLY PATIENTS USING MALAYSIAN POTENTIALLY INAPPROPRIATE PRESCRIBING TOOL (MALPIP) AND THE 2023 BEERS CRITERIA

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Background: Potentially inappropriate medications (PIMs) contribute to adverse drug events, prolonged hospitalization, and increased healthcare costs among older adults. Several explicit screening tools are available, including the 2023 American Geriatrics Society (AGS) Beers Criteria and the Malaysian Potentially Inappropriate Prescribing (MALPIP) criteria, but the differences in the application in Malaysian hospitalized older adults remain unclear.

Objectives: To determine the prevalence of PIMs using MALPIP and the 2023 AGS Beers Criteria, identify the medications involved, determine factors associated with PIMs, and compare PIM prevalence identified by both criteria

Methods / Case summary / Description: A retrospective cross-sectional study was conducted among 229 hospitalized older adults. PIMs were identified using MALPIP for patients aged ≥60 years and the 2023 AGS Beers Criteria for patients aged ≥65 years. Demographic and clinical data were extracted from electronic medical records, and multivariable logistic regression was performed to identify factors associated with PIMs.

Results / Outcomes / Discussion: MALPIP identified PIMs in 43/229 (15.7%) among patients aged ≥60 years. Among patients aged ≥65, the 2023 AGS Beers Criteria identified PIMs in 48/166 (28.9%) while MALPIP identified PIM in 17.5% (29/166) . Female gender was independently associated with Beers-defined PIMs (adjusted odds ratio [AOR]=2.09, 95% CI: 1.17–3.73; p=0.013). Length of hospital stay was independently associated with MALPIP-defined PIMs (. Gliclazide and prazosin were the most frequently identified PIMs using the Beers Criteria and MALPIP, respectively. Sodium valproate was uniquely identified by MALPIP, whereas rivaroxaban and aspirin were unique to the Beers Criteria.

Conclusion: Both screening tools identified clinically important PIMs but differed in prevalence and medication detection. Their complementary strengths support incorporating both international and locally developed criteria into medication review for hospitalized older adults.

Keywords: Potentially inappropriate medications; MALPIP; 2023 AGS Beers Criteria; Older adults; Discharge

PC_USM_01 (POSTER)

KNOWLEDGE, ATTITUDE, AND PRACTICE TOWARD OVER-THE-COUNTER ANALGESICS AMONG THE YEMENI POPULATION: A COMMUNITY-BASED CROSS SECTIONAL STUDY

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Background: Widespread self-medication with over-the-counter (OTC) analgesics in Yemen is heavily exacerbated by prolonged conflict and weak regulatory oversight. With pharmacies acting as primary care points, this raises concerns about unsupervised use and safety.

Objective: This study aimed to assess the knowledge, attitude, and practice (KAP) regarding OTC analgesic use among the adult Yemeni population.

Methods: A nationwide cross-sectional study was conducted among 684 adults across Yemen's regions utilizing digital and face-to-face sampling. Data was collected via a validated questionnaire assessing KAP toward paracetamol and non-steroidal anti-inflammatory drugs (NSAIDs). Due to non-normally distributed data, statistical analysis emphasized non-parametric comparative tests (Mann-Whitney U, Kruskal-Wallis), Spearman's rank correlation for KAP interrelationships, and a two-stage univariable followed by multivariable linear regression to identify independent KAP predictors.

Results: While 57.5% of participants demonstrated good paracetamol knowledge, a striking 82.7% exhibited poor knowledge regarding NSAIDs, particularly concerning administration limits and drug allergies. Attitudes were predominantly neutral (71.8%), yet self-reported practices were acceptable (44.9% good; 46.8% moderate). A strong positive correlation existed between safety-conscious attitudes and safe medication practices ($P < 0.001$). Multivariable regression revealed that higher educational attainment, increased monthly income, and chronic diseases significantly predicted better KAP outcomes ($P < 0.05$).

Conclusion: Yemeni adults demonstrate adequate paracetamol awareness but possess critical deficits in NSAID knowledge. Because positive attitudes strongly predict safe behaviors, targeted educational campaigns and enhanced regulations are essential to mitigate misuse risks.

Keywords: OTC analgesics, KAP, Yemen, NSAIDs.

PC_USM_06 (POSTER)

MAPPING THE GLOBAL EVOLUTION OF TAURINE RESEARCH IN GEROSCIENCE: A BIBLIOMETRIC ANALYSIS OF AGING MECHANISMS, SCIENTIFIC COLLABORATION, AND TRANSLATIONAL POTENTIAL

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Background: Aging and age-related conditions have become major global public health concerns, driving the search for effective anti-aging supplements. Although taurine is widely recognized as a promising anti-aging compound, its comprehensive research landscape remains underexplored.

Objective: To evaluate current publication trends, identify recent research hotspots, and project future trajectories in taurine-geroscience research.

Methods: A bibliometric analysis was conducted on 211 publications extracted from the Scopus database covering the period from 2020 to 2025, utilizing the Bibliospy tool.

Results: The findings revealed a steady upward trend in publication volume, peaking in 2025, accompanied by strong citation impact and active international collaboration networks. China led in total publication volume, the United States contributed high-impact studies, and European countries acted as central hubs for international collaboration. Thematic mapping demonstrated a clear evolution from foundational biochemical studies toward mechanistic, integrative, and clinical research, highlighting the growing scientific impact of taurine research and its translational potential as a promising anti-aging supplement and therapeutic candidate.

Conclusion: Taurine functions as an emerging multi-target regulator of aging processes. Its robust research momentum highlights its strong translational potential for development and marketing as an evidence-based anti-aging therapeutic and supplement.

Keywords: Taurine, aging, trends

PC_USM_22 (POSTER)

Exploring Patients' Motivations for Complementary and Alternative Medicine Use and Experiences of Concurrent Use with Prescribed Medicines in Type 2 Diabetes Mellitus: A Qualitative Study from Pakistan

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Background: Type 2 diabetes mellitus (T2DM) is a growing public health problem, particularly in low- and middle-income countries such as Pakistan. Many patients use complementary and alternative medicine (CAM) alongside prescribed medications, which may influence medication adherence. However, qualitative evidence on patients' motivations for CAM use and its influence on medication-taking behaviours in Pakistan remains limited.
Objectives: To explore motivations for CAM use among patients with T2DM and their experiences of using CAM alongside prescribed medications, with emphasis on factors influencing medication adherence in Punjab, Pakistan.
Methods: An exploratory phenomenological study was conducted among 18 adults with T2DM using CAM alongside conventional therapy, recruited purposively from selected government hospitals in Lahore. Semi-structured face-to-face interviews were conducted in Urdu until data saturation. Interviews were audio-recorded, transcribed verbatim, translated into English, and analysed using inductive thematic analysis following Braun and Clarke's six-phase framework using NVivo 15.
Results: Six major themes emerged. CAM use was influenced by family, peers with diabetes, traditional healers, social media, and cultural beliefs. Participants perceived CAM as affordable, accessible, natural, and beneficial for glycaemic control. While many continued prescribed medications alongside CAM, others reported self-directed dose reduction, delayed initiation, or discontinuation of conventional medicines, particularly insulin, due to perceived improvement or concerns about adverse effects. Dietary and lifestyle modifications were also commonly incorporated into diabetes self-management.
Conclusions: CAM influenced medication-taking behaviours and diabetes self-management. Patient education and healthcare interventions are needed to promote medication adherence, improve patient–provider communication, and support the safe integration of CAM with conventional treatment.

Keywords: Complementary and Alternative Medicine, Medication Adherence, Type 2 diabetes mellitus

PC_USM_17 (POSTER)

CLINICAL OUTCOMES OF COMMUNITY PHARMACY POINT-OF-CARE TESTING FOR TYPE 2 DIABETES: A SYSTEMATIC REVIEW

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Background: Type 2 diabetes mellitus (T2DM) is a major global health concern, and delayed diagnosis contributes to poor clinical outcomes. Community pharmacy-based point-of-care testing (POCT) has emerged as an accessible strategy for early detection and diabetes management.
Objective: To systematically evaluate the clinical outcomes of community pharmacist-led POCT interventions for T2DM.
Methods: A systematic review was conducted according to PRISMA 2020 guidelines and registered with PROSPERO (CRD420251108843). PubMed, Scopus, Web of Science, and CINAHL were searched for English-language studies published between January 2015 and December 2025. Eligible studies evaluated POCT for T2DM in community pharmacy settings and reported clinical, service, or implementation outcomes**.** Risk of bias was assessed using RoB 2 and ROBINS-I, and findings were synthesized narratively.
Results: A total of 10 studies met the inclusion criteria. Community pharmacist-led POCT interventions consistently improved clinical outcomes by identifying individuals with previously undiagnosed T2DM or prediabetes, facilitating timely referral for confirmatory diagnosis, and supporting early treatment initiation. Management-focused interventions demonstrated improvements in glycaemic control, including reductions in HbA1c, enhanced medication adherence, and increased patient satisfaction. These findings highlight the clinical value of integrating POCT into community pharmacy practice.
Conclusion: Community pharmacist-led POCT is an effective strategy for improving clinical outcomes through early detection, timely referral, and better diabetes management. Expanding these services may strengthen primary healthcare and reduce the burden of T2DM.

Keywords: Type 2 diabetes mellitus; point-of-care testing; community pharmacy; clinical outcomes; systematic review.

PC_USM_24 (POSTER)

A SYSTEMATIC REVIEW OF HEALTHCARE PROFESSIONALS' KNOWLEDGE, ATTITUDES, PRACTICES, AND INFLUENCING FACTORS TO PHARMACOVIGILANCE

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Background: Pharmacovigilance mitigates adverse drug reactions (ADRs), yet underreporting persists in South and Southeast Asia. Synthesizing the region's fragmented evidence is required to identify specific systemic barriers and improve local reporting practices.
Objective: To systematically review healthcare professionals' (HCPs) pharmacovigilance knowledge, attitudes, practices, barriers, and facilitators across South and Southeast Asia.
Methods: Following PRISMA guidelines, a systematic literature search of four databases (PubMed, Scopus, ScienceDirect, Web of Science) was independently conducted by two reviewers. It included English-language quantitative, qualitative, and mixed-methods studies (published 2015-2026) focusing on practicing physicians, pharmacists, and nurses. The data's methodological quality was rigorously evaluated using the JBI and MMAT appraisal tools.
Results: A total of 35 studies met the inclusion criteria from an initial literature search of 14,770 articles. These studies spanned ten South and Southeast Asian countries, with Pakistan and India contributing over 70% of the regional evidence base. Despite adequate clinical knowledge to identify an ADR, HCPs exhibited a practice gap mediated by operational knowledge deficits. Most HCPs were unaware of how to report an ADR, lacking familiarity with national regulatory bodies, reporting deadlines, and submission workflows. Pharmacists generally outperformed physicians and nurses. Primary reporting barriers included heavy workloads, unavailable physical forms, procedural ignorance, and diagnostic uncertainty, while key facilitators included continuous training, online portals, administrative feedback, and clinical pharmacist support.
Conclusion: Positive HCP attitudes do not translate into consistent reporting due to procedural and infrastructural barriers. Strengthening regional pharmacovigilance requires targeted training, accessible electronic infrastructure, feedback loops, and institutional incentives.

Keywords: Pharmacovigilance, ADR, HCPs, South Asia and Southeast Asia.

PC_USM_27 (POSTER)

EXPLORING COMMUNITY PHARMACISTS' KNOWLEDGE, ATTITUDE AND PERCEPTIONS TOWARDS ELDER ABUSE IN MALAYSIA

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Background: Elder abuse causes harm to older persons, either intentionally or unintentionally, and encompasses various forms, including physical, psychological, financial, and sexual abuse, as well as neglect and self-neglect. Studies estimate that one in ten older adults worldwide experiences elder abuse, underscoring its significant public health burden. With the continued growth of the older adult population, the prevalence and impact of elder abuse are expected to increase further.
Objective: This study focuses on assessing the community pharmacists' knowledge, attitude and perceptions about the elder abuse and to create awareness by being prepared in handling elder abuse.
Methods: A cross-sectional study was conducted among the 200 community pharmacists in Malaysia using convenient sampling method for 6 months. A questionnaire was developed with knowledge, attitude and perception domains, respectively which were assessed using the 5-point Likert scale and validated for internal consistency (Cronbach's alpha =0.842), contents were validated with the subject experts. Chi square test, Shapiro-Wilk test was used to analyse the data.
Results: Pharmacists displayed moderate levels of knowledge and attitude towards elder abuse. Majority of the pharmacists were in the consensus regarding legal responsibility of healthcare providers and personal responsibility as a pharmacist in reporting ($p = 0.000$). Respondents perceived that social workers are primarily responsible for coping with elder abuse ($p = 0.000$). Pharmacists were neutral with regards to patient-pharmacist relationship, assumption and disclosure of the reporter's identity ($p = 0.000$). Pharmacists occupy a distinctive role that enables them to identify or witness instances of elder abuse, which underscores the necessity for them to be fully aware of their reporting responsibilities as reliable members of the healthcare team.
Conclusion: Community pharmacists in Malaysia possess moderate levels of knowledge and attitude towards elder abuse. To address this gap of knowledge among pharmacists, measures like specialized training courses and geriatric management in pharmacy curricula should be implemented.

Keywords: Elder abuse, Intimate Partner Violence, Geriatrics, Ageing, Pharmacists

PC_USM_28 (POSTER)

EVALUATION OF ANTICOAGULATION KNOWLEDGE AND ITS ASSOCIATION WITH INR CONTROL AMONG WARFARIN PATIENTS IN HOSPITAL YAN

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Background: Warfarin is a widely used oral anticoagulant for preventing thromboembolic events in patients with conditions such as atrial fibrillation and venous thromboembolism. However, its narrow therapeutic index requires careful monitoring through the International Normalized Ratio (INR). Patient related factors, particularly knowledge of warfarin therapy, may influence anticoagulation outcomes. The Oral Anticoagulation Knowledge (OAK) Test is a validated instrument used to assess the patient's understanding of warfarin therapy.

Objective: The study aimed to determine the mean Oral Anticoagulation Knowledge (OAK) score among patients receiving warfarin therapy, examine the association between OAK scores and patients' demographic profile, and evaluate the relationship between OAK scores and INR control among warfarin patients in Hospital Yan.

Methods: A retrospective cross-sectional study was conducted among 51 patients who had been receiving warfarin therapy for at least six months. Patient knowledge was assessed using the Oral Anticoagulation Knowledge (OAK) test through face-to-face interviews conducted between April and August 2024. Medical reviews were reviewed to obtain INR values and Time in Therapeutic Range (TTR) was calculated using the Rosendaal method. Statistical analysis were performed using SPSS. The Chi-square test was used to examine the assosciation between OAK score categories and demographic characteristics, while Spearman's rank correlation was used to

Results: The mean OAK score was 58.3% indicating a moderate level of warfarin knowledge among the study participants. Knowledge scores differed significantly according to age and occupation. However, no significant correlation was found between OAK scores and INR control, as measured by Time in Therapeutic Range (TTR), although the correlation observed was weak and negative.

Conclusion: Despite a moderate level of knowledge observed among patients, no strong correlation was found between knowledge levels and INR control, suggesting that other factors, such as adherence and external healthcare influences, play a more significant role in managing anticoagulation therapy. Thus further initiatives are needed to improve patient education and anticoagulation care in Hospital Yan.

Keywords: warfarin, INR, OAK test, TTR

PC_USM_33 (POSTER)

VITAMIN D DEFICIENCY AND ASSOCIATED RISK FACTORS AMONG PREGNANT WOMEN IN SAUDI ARABIA: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Background: Vitamin D deficiency (VDD) is a major global health concern, with particularly high prevalence in Asia and the Middle East. Despite abundant sunlight, VDD remains common among pregnant women in Saudi Arabia, partly due to limited sun exposure and clothing practices. However, evidence is fragmented, and no previous meta-analysis has specifically synthesized its prevalence and associated risk factors in this population.
Objectives: This meta-analysis aimed to determine the prevalence of vitamin D deficiency among pregnant Saudi women and identify its associated risk factors.
Methods: A systematic search of PubMed, Scopus, and Web of Science identified eligible Saudi studies published from 2000 to January 2023, focusing on vitamin D deficiency, serum 25(OH)D levels, and associated risk factors among pregnant women.
Results: Eight studies were included in the meta-analysis. The pooled prevalence of vitamin D deficiency among pregnant women in Saudi Arabia was 76.35% (95% CI: 61.75%–86.58%). Significant heterogeneity was observed across studies ($I^2 = 97.7\%$; $\tau^2 = 0.66$; $Q(7) = 310.05$, $p < 0.001$). Among the identified risk factors, limited sun exposure was consistently associated with a higher prevalence of vitamin D deficiency compared with regular sun exposure.
Conclusions: Vitamin D deficiency is highly prevalent among pregnant women in Saudi Arabia. Education, appropriate sun exposure, and routine vitamin D supplementation are recommended to improve maternal vitamin D status and potentially pregnancy outcomes.

Keywords: Vitamin D deficiency, Pregnant Women, Saudi Arabia, Hypovitaminosis D,25-hydroxyvitamin D

PC_USM_22 (POSTER)

PREVALENCE AND CONTRIBUTING FACTORS OF DEPRESSION IN PRE-DIALYSIS PATIENTS WITH CHRONIC KIDNEY DISEASE: A SYSTEMATIC REVIEW

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Background: Depression is a common yet underrecognized comorbidity among adults with non-dialysis-dependent chronic kidney disease (pre-dialysis CKD), adversely affecting quality of life, treatment adherence, and disease progression.
Objective: This systematic review aimed to evaluate the prevalence of depression and identify its contributing factors among adults with pre-dialysis CKD.
Methods: A PRISMA-guided systematic review searched PubMed, EBSCO, Web of Science, and the Cochrane Library. Observational and cohort studies reporting depression prevalence or contributing factors among adults with pre-dialysis CKD were included. The review focused on depression as a clinically relevant comorbidity in patients with pre-dialysis CKD rather than on the temporal onset of depression relative to CKD diagnosis. Two reviewers independently performed study selection, data extraction, and quality assessment using the Joanna Briggs Institute (JBI) Critical Appraisal Checklist, with disagreements resolved by a third reviewer.
Results: The review included 23 studies that met the inclusion criteria. The prevalence of depression among pre-dialysis CKD patients ranged from 10% to 58%, demonstrating substantial heterogeneity across study populations, CKD stages, and assessment methods. Across the included studies, declining kidney function, vitamin D deficiency, physical inactivity, lower educational attainment, unemployment, comorbidities, and adverse socioeconomic status were consistently associated with depression, while regular physical activity was identified as a protective factor. Variations in study design, participant characteristics, and depression assessment tools likely contributed to the observed differences in prevalence estimates.
Conclusion: Depression is highly prevalent among pre-dialysis CKD patients, highlighting the need for routine screening and multidisciplinary care. Standardized longitudinal studies are needed to inform targeted interventions.

Keywords: Depression; Pre-dialysis; Chronic kidney disease; Prevalence; Risk factors

PC_USM_20 (POSTER)

ASSESSMENT OF PHYSICIANS' AWARENESS OF THE WHO RESERVED ANTIMICROBIAL LIST

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Background: The emergence and spread of antimicrobial resistance (AMR) pose a significant threat to global health. The WHO developed the AWaRe classification to guide antibiotic stewardship globally. It divides antibiotics into Access, Watch, and Reserve groups, based on their impact on AMR and the need for careful use. Understanding physicians' awareness and practices regarding this list is essential for effective antimicrobial stewardship.
Objective: To assess physicians' awareness, knowledge, attitudes, and practices regarding the WHO Reserved antimicrobial list in Alexandria, Egypt, and to identify barriers to its appropriate use.
Methods: A cross-sectional questionnaire was administered to 79 physicians. The survey covered demographics, training, knowledge of the AWaRe list, attitude, prescribing practices, and perceived barriers. Descriptive and analytical statistics were used, and open-ended responses were analyzed thematically.
Results: The majority of physicians have >20 years' experience (49.4%) and work in private settings (70.9%). Physicians who received training demonstrated significantly higher awareness and and knowledge of the WHO reserved antimicrobial list. Cephalosporins were the most commonly prescribed antibiotics (48.1%), following by fluoroquinolones (31.6%), carbapenems (35.4%), and polymyxins (19.0%). A significant association was found in prescribing Carbapenems between trained and untrained physicians ($\chi^2 = 7.795$, $p = 0.005$). A highly significant association was also found between training and access to antimicrobial stewardship guidelines ($\chi^2 = 9.964$, $p = 0.007$). The vast majority (81.0%) of physicians (84.8%) expressed interest in receiving additional training on antimicrobial stewardship and the WHO reserved list.
Conclusion: While physicians demonstrate a generally positive attitude toward the WHO reserved antibiotics and support stewardship measures, significant gaps exist in formal training and knowledge of classification criteria. Over-reliance on empirical therapy and persistent patient pressure remain barriers. Addressing these gaps is critical to preserving the efficacy of last-resort antibiotics and combating AMR.

Keywords: WHO, AWaRe classification, antimicrobial resistance, KAP