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Conference Abstract Book

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President of University of Al-Ameed
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————— First Theme —————

METABOLIC DISORDERS AND ENDOCRINE DISEASES

■ Paper 1:

Study on the Association of Thyroid Function with Vitamin D Status in Diverse Adult Population

Ahmed s. Mohammed^{1*}, Mohammed S. Khlaif², and Ali Abdulla Qassim³

¹ Department of Pharmacy, Al-Zahrawi University College, Karbala, Iraq. ² Nephrologist at the dialysis center of Al- Sader teaching hospital, Missan, Iraq. ³ Department of Medical Laboratory Techniques, Imam Al-Sadiq University, Maysan, Iraq.

*Corresponding Author: Ahmed s. Mohammed: ahmedallamy182@gmail.com

Abstract:

This study investigated the relationship between vitamin D status and thyroid function in a cross-sectional observational study of 200 Iraqi adults from four governorates. Participants were categorized into vitamin D sufficient (VDS) and vitamin D deficient (VDD) groups based on serum 25(OH)D levels. The study found significant differences between the groups in thyroid-stimulating hormone (TSH), free thyroxine (FT4), parathyroid hormone (PTH), and serum calcium levels. VDD participants showed higher TSH ($p = 0.005$) and PTH ($p < 0.001$) levels and lower FT4 ($p < 0.001$) and serum calcium ($p = 0.015$) levels compared to VDS participants. Vitamin D levels were weakly but significantly correlated with TSH ($r = -0.177$, $p = 0.012$), FT4 ($r = 0.140$, $p = 0.048$), PTH ($r = -0.166$, $p = 0.018$), and serum calcium ($r = 0.239$, $p = 0.001$). The prevalence of vitamin D deficiency was higher in females (67.20%) than males (59.40%). All cases of subclinical hypothyroidism ($n = 6$) were observed in the VDD group. The risk estimate was 0.953 (95% CI: 0.917-0.99), indicating that the probability of having adequate thyroid function is slightly lower in those with low vitamin D levels. However, statistical tests showed mixed results regarding the significance of this association. These findings highlight the complex relationship between vitamin D status and thyroid function, emphasizing the need for further research to elucidate the mechanisms underlying this association and its clinical implications.

Keywords: Vitamin D deficiency, thyroid function, subclinical hypothyroidism, parathyroid hormone, calcium homeostasis.

■ Paper 2:

Study the Relation between Body's Mass and the HbA1% Level for Diabetes Patients in Missan Province

Saleh N.Muhan

¹ Doctor of Philosophy in Physics, Teacher in Gifted School, Department of Physics, Ministry of Education, Iraq.

*Corresponding Author: Saleh N. Muhan: salhnymt670@gmail.com

Abstract

In this study, 50 female and 50 male diabetes patients from Missan Province in diabetic and endocrinology hospital were stratified by gender to examine the association between body mass index (BMI) and HbA1c levels. The analysis concentrated on age, BMI, HbA1c, and disease duration using descriptive statistics and Spearman's correlation. The key findings identified gender-specific tendencies. In females, there were significant negative associations between BMI and HbA1c (Correlation $\rho = -0.293$, significant ($p = 0.039$) and disease duration ($\rho = -0.351$, $p = 0.013$). In Males there is no relationship between BMI and HbA1c, but there is a significant positive correlation between disease duration and HbA1c ($\rho = 0.386$, $p = 0.006$). The findings point to the necessity for specialized diabetes care techniques by indicating that BMI has different metabolic effects on glycemic control depending on gender.

Keywords: BMI, HbA1, Gender Differences, Glycemic Control, Spearman's Correlation

■ Paper 3:

A Study of the Role of Some Biochemical Parameters in Al Najaf Females with Nonalcoholic Fatty Liver Disease

Mahdi Mohammed Al-Sahlawi¹, Walaa Mohammed Najem^{2*}, Zahraa Abdul Zahra Hassan³, Fatima Zuhair Dohan⁴, Asmaa Ali Hatem⁵, Ayat Rahman Musa⁶, and Zainab Tahseen Hussein⁷

7-1 College of Medical Laboratory Techniques, Imam Ja'afar Al-Sadiq Uni-

versity, Najaf, Iraq.

*Corresponding Author: wala_mohammed@ijsu.edu.iq

Abstract:

Background: This study aimed to evaluate the relationship between obesity and some important biomarkers, and its impact on liver function and metabolism in a group of women. The study was conducted at Al-Hakim General Hospital, under the supervision of Dr. Ali Fayez, and included 60 samples from women with infections, with obesity identified as the primary cause of infection in most cases.

Methods: Demographic information was gathered from the subjects, including age, weight, and height. Laboratory analyses were done on blood specimens to evaluate liver enzyme levels (AST, ALT, ALP), triglycerides (TG), and high-density lipoprotein cholesterol (HDL-C). Body mass index (BMI) had been assessed to evaluate obesity in the participants.

Results: The findings indicated a significant correlation between obesity and increased triglyceride and liver enzyme levels, implying that obesity could be a primary risk factor for metabolic and hepatic dysfunction. The research indicated a significant difference between the patient group as well as the control group across various indicators, including as BMI, triglyceride concentrations, liver enzymes, and HDL-C levels.

Liver enzymes (AST and ALT) exhibited significant sensitivity and specificity in differentiating between patients and healthy people, indicating their potential be reliable diagnostic markers. The study demonstrated significant associations among the numerous biomarkers, indicating intricate connections between metabolic risk factors and liver function. Additionally, the study revealed an inverse correlation between age and alkaline phosphatase (ALP) levels, indicating that ALP levels may decrease with advancing age. In light of these findings., The study recommends towards implementing of weight management techniques to avoid metabolic disease and enhance liver function, beside doing regular liver function tests, particularly in patients with obesity or other metabolic risk factors. The research moreover advocates for the advancement of enhanced diagnostic methodologies employing liver enzymes (AST and ALT) and for the conducting of additional research to clarify the molecular principles governing the interactions among different biomarkers. the study recommends focusing on weight management strategies to prevent

metabolic disorders and improve liver function, and performing periodic liver function tests, especially in individuals with obesity or other metabolic risk factors. The study also recommends developing improved diagnostic strategies based on liver enzymes (AST and ALT), and conducting further studies to understand the biological mechanisms underlying the interrelationships between the various biomarkers.

Conclusion: The study demonstrated significant correlations among several biomarkers, indicating a complicated linkage between metabolic risk factors and liver function.

■ Paper 4:

Macroprolactin: Are Age and Gender Related Issues? A Cross-Sectional Study in Iraqi Patients with Hyperprolactinemia

Khalid Talib Kadhim^{1*}, Ali Talib Mansoor², Mohammed Abdulhadi Mohammed³, Sanad Asaad Abd Al-Hussein⁴, Zaid Q. Abd-al-razaq⁵

¹Assistant Professor, Department of Endocrinology, Hammurabi Medical College, Babylon University, Iraq.

² Lecturer, Department of Internal Medicine, Hammurabi Medical College, Babylon University, Iraq.

³ Endocrinology Specialist, Diyala Health Directorate, Iraq.

⁴ Endocrinology Specialist, Al-Najaf Health Directorate, Iraq.

⁵ Endocrinology Specialist, Al-Anbar Health Directorate, Iraq.

*Corresponding Author: Dr. Khalid Talib Kadhim: ham599.khalid.talib@uobabylon.edu.iq

Abstract:

Background: Hyperprolactinemia, defined as elevated serum prolactin, may occur with minimal or no clinical manifestations. Macroprolactin, a high-molecular-weight aggregate, can elevate measured prolactin levels without biological activity, potentially leading to misdiagnosis.

Aim: To assess the relationship between age, gender and macroprolactinemia in Iraqi patients with hyperprolactinemia.

Materials and Methods: This cross-sectional study included 44 patients (28 females, 16 males) with elevated prolactin and minimal or no clinical features of hyperprolactinemia. Macroprolactin was detected using polyethylene glycol (PEG) precipitation, and monomeric prolactin was calculated. Statistical analysis was performed with SPSS version 25. Pearson's correlation tested the association between age and prolactin, while point-biserial correlation assessed gender differences.

Results: A moderate positive correlation was found between age and pre-PEG prolactin ($r=0.38$, $p=0.011$), suggesting increased macroprolactinemia prevalence with age. Gender showed no significant association with prolactin levels ($r_{pb} = -0.12$, $p=0.439$).

Conclusion: Screening for macroprolactin should be performed in hyperprolactinemic patients, particularly in middle-aged and older individuals, irrespective of gender.

Keywords: Macroprolactin, polyethylene glycol precipitation, hyperprolactinemia.

■ Paper 5:

The Relationship Between the Cumulative Dose of Long-Acting Release Octreotide and the Size of Pituitary Adenoma in Iraqi Patients with Acromegaly: A Cross-Sectional Study

Khalid Talib Kadhimi¹, Zaid Q. Abd-al-Razaq², Sanad Asaad Abd Al-Husseini³, Ahmed Hassan R. al-Zurfi⁴, Ali Talib Mansoor⁵

¹ Department of Medicine, Hammurabi Medical College, Babylon University, Bābil, Iraq.

² Al-Anbar Health Directorate, Iraq.

³ Al-Najaf Health Directorate, Iraq.

⁴ Department of Internal Medicine, Hammurabi Medical College, Babylon University, Iraq.

⁵ Department of Medicine, Hammurabi Medical College, Babylon University, Iraq.

*Corresponding Author: Khalid Talib Kadhim: ham599.khalid.talib@uobabylon.edu.iq

Abstract:

Background: Acromegaly is characterized by excessive growth hormone (GH) secretion, usually due to pituitary adenoma. Somatostatin receptor ligands (SRLs), such as octreotide long-acting release (LAR), are widely used in medical therapy, with effects on biochemical control and tumor shrinkage.

Methods: A cross-sectional study was conducted on 27 acromegalic patients (15 males, 12 females) without prior surgery or radiotherapy, recruited from the Iraqi National Center of Endocrinology. Patients received variable cumulative doses of octreotide LAR as primary therapy. Tumor size was assessed by magnetic resonance imaging (MRI), and biochemical response was evaluated by plasma GH and insulin-like growth factor-1 (IGF-1) levels. Descriptive statistics and point-biserial correlation were applied. **Results:** The mean cumulative dose of LAR was 990 mg (range: 100–2500 mg). Adenoma size decreased in 15 patients (55.6%) while no change was observed in 12 (44.4%). Biochemical control was achieved in 19 patients for IGF-1 (70.4%) and 16 patients for GH (59.3%). Correlation analysis showed a negative but statistically non-significant association between cumulative LAR dose and tumor size reduction ($r_{pb} = -0.15$, $p = 0.467$). **Conclusion:** Octreotide LAR therapy resulted in tumor shrinkage in more than half of the patients, with satisfactory biochemical control. However, cumulative LAR dose was not significantly correlated with the degree of adenoma size reduction, highlighting the variability of treatment response.

Keywords: Acromegaly; Octreotide LAR; Pituitary adenoma; Somatostatin analogues; Growth hormone; IGF-1

■ Paper 6:

Impact of ABCC8 and KCNJ11 Genes Mutation on Physiological Parameters among Type 1 Diabetics in Al Muthanna Province/ Iraq

Salsabeel Mohammed Abdallha^{1*}, Yasir Adil Jabbar Alabdali², Mohammed Qasim Waheeb³

^{1,2,3} Department of Biology, College of Science, Al Muthanna University, Samawah, Iraq.

*Corresponding Author: Salsabeel Mohammed Abdallha: salsabeelmoh@mu.edu.iq

Abstract:

Background: Type 1 diabetes is a disorder in which autoimmune mechanisms lead to pancreatic β -cell damage. and chronic hyperglycemia. Genetic variants in the channel subunits, encoded by ABCC8 and KCNJ11, can modulate insulin secretion.

Objective: The aim was to assess genotype frequencies of ABCC8 rs1799854, ABCC8 rs1801261, and KCNJ11 rs5219 in T1D children (≤ 15 years) from Al Muthanna Province and to evaluate their associations with several clinical (e.g., BMI) and biochemical (e.g., LDL, HDL, HbA1c, and RBS) parameters.

Methods: A case-control study recruited sixty T1D patients and sixty age- and sex-matched healthy child between November 2024 and February 2025. Genomic DNA was extracted from peripheral blood, and SNPs were genotyped by PCR-RFLP (ABCC8 variants) or ARMS-PCR (KCNJ11). Biochemical parameters were measured via automated analyzers, and their association with the genotype was analyzed by either a t-test or an ANOVA test. The association between different genotypes and the individual's status was assessed using a chi-squared test.

Results: The heterozygous CT genotypes of ABCC8 rs1799854 and KCNJ11 rs5219 were significantly more predisposed in T1D patients (OR = 3.27, $p = 0.003$; OR = 6.1, $p < 0.0001$, respectively). In contrast, the ABCC8 rs1801261 TT genotype conferred a protective effect (OR = 0.22, $p = 0.013$). Notably, the genotype-specific differences were associated with several clinical and biochemical parameters. The CT genotype in rs1799854 and rs5219 was associ-

ated with significantly lower BMI, HDL, and elevated HbA1c and RBS levels in T1D patients compared to controls. Moreover, the ABCC8 rs1801261 CC genotype showed reduced HDL and increased glycemic indices, whereas TT carriers maintained more favourable glycemic and lipid profiles. Deviations from the Hardy-Weinberg equilibrium suggest potential disease association among T1D cases for the rs1799854 and rs5219 variants.

Conclusion: ABCC8 and KCNJ11 polymorphisms significantly affect T1D susceptibility and alter glycemic and lipid profiles in Iraqi T1D children. These variants may act as biomarkers for early risk stratification in T1D pediatric patients.

Keywords: ABCC8 gene, KCNJ11 gene, T1D and lipid profile

■ Paper 7:

Early prediction and diagnosis of peripheral neuropathy in type 2 diabetes using biochemical parameters

Eman Naim Taher^{1*}, Narjis Hadi Al – Saadi²

¹ Department of Chemistry, College of Science, University of Karbala, Karbala, Iraq. ² Department of Chemistry, College of Science, University of Karbala, Karbala, Iraq.

*Corresponding Author: Eman Naim Taher: eman.n@s.uokerbala.edu.iq

Abstract:

Diabetic peripheral neuropathy (DPNP) is the term used to describe peripheral nerve damage in people with diabetes when other possible causes have been eliminated. The noninvasive approaches for diagnosed DPNP are not fully studied. Thus, the current study aimed to discover a simple and noninvasive biochemical methods that can be used to prognose neuropathy in patients with type 2 diabetes. Neuron-specific enolase (NSE) indicated damage to a nerve, while nerve growth factor (NGF) indicated its safety. Aims: This study investigates parameters for diabetic peripheral neuropathy (DPNP) prediction and diagnosis. It also examined the association between parameter levels and neuropathy.

Methods: A case-control study was conducted on 45 DPNP patients, 48 diabetics without neuropathy (DWNP), and 45 healthy controls (ages 35–60). DPNP patients were subdivided by intensity. Serum NSE and NGF were measured using ELISA.

Results: DPNP patients had higher NSE levels ($p = 0.008$, OR = 1.1529, CI = 1.118~2.092) and lower NGF levels ($P = 0.022$, OR = 0.982, CI = 0.966 ~ 0.997) compared to DWNP patients. Binary logistic regression analysis revealed a correlation between study parameters and neuropathy ($\beta = 0.384$, $p = 0.013$ for NSE, $\beta = -0.019$, $P = 0.343$), additionally the disease have been as significant associated with age and duration of injury ($\beta = 0.129$, $p < 0.001$, OR = 1.137, CI = 1.061~1.219) for age ($\beta = 0.589$, $p < 0.001$, OR = 1.802, CI = 1.430 ~ 2.270). DPNP compare to DWNP groups had AUC values of 0.623 and 0.425 for NSE and NGF, respectively, on the ROC curve.

Conclusion: NSE was useful for diagnosis and prediction of DPNP. Further studies should test other markers.

Keywords: Diabetic Peripheral neuropathy, Neuron-specific enolase NSE, Nerve growth factor NGF, Diabetes type 2

■ Paper 8:

THRA rs939348 Polymorphism and L-Thyroxin Response in Iraqi Hypothyroid Females

Nabaa Zuhair Miran¹, Zahraa Abed Al-kareem², Shaima Jabbar^{2*}, Qusay Baqer Alzajaji³

¹ The graduate program of Pharmacology and Toxicology Department, Pharmacy College, University of Karbala, Karbala, Iraq.

² Pharmacology and Toxicology Department, Pharmacy College, University of Karbala, Karbala, Iraq.

³ Internal medicine, Al-Hassan Metabolism, Endocrine and Diabetes center, Karbala, Iraq. *Corresponding Author: Shaima Jabbar: shaymaa.a@uokerbala.edu.iq

Abstract:

Hypothyroidism is a prevalent endocrine disorder, particularly affecting women and older adults, with potentially serious health impacts if left untreated. Levothyroxine is the standard therapy for primary hypothyroidism; however, its efficacy may be influenced by genetic polymorphisms. This study investigates the influence of the THRA rs939348 T>C polymorphism on L-thyroxine treatment response in Iraqi females with primary hypothyroidism. A cross-sectional study was conducted from September 2023 to July 2024, including 100 hypothyroid female patients on levothyroxine therapy (≥ 4 months) and 50 healthy female controls. Clinical data and treatment outcomes were gathered through questionnaires and medical records. DNA genotyping for THRA rs939348 was performed using Restriction Fragment Length Polymorphism-PCR (RFLP-PCR), and biochemical analyses assessed thyroid function, glucose, insulin, and lipid profiles.

Patients were grouped by THRA rs939348 genotype (TT, TC, CC) and categorized as responders or non-responders based on achieving normalized TSH levels (0.5-5 μ U/ml). Key findings indicated that among responders, 33% had the TT genotype, while 20% had TC/CC genotypes. Conversely, among non-responders, only 11% had the TT genotype, and 36% had TC/CC genotypes, showing a significant association between the mutant allele and poorer treatment response ($P < 0.0001$). Responders with the TT genotype demonstrated stable TSH levels similar to healthy controls, whereas non-responders with the TC/CC genotypes had TSH levels six times higher than responders and healthy individuals. These results underscore the clinical relevance of THRA rs939348 polymorphism testing, as it may help identify patients at risk for suboptimal treatment response, potentially guiding personalized hypothyroidism management strategies.

Keywords: hypothyroidism, L-thyroxin, TSH, THRA1 polymorphism.

■ Paper 9:

Effect of Coughing Technique related to Pain Reduction and Patient Satisfaction During Insulin Injection among Type 2 Diabetes Mellitus: A Randomized Controlled Trial

Ali Dhahir Abdulyemmah^{1*}, Haider Mohammed Majeed²

¹ Department of Anesthesia, AlSafwa University, Karbala, Iraq.

² Department of Adult Nursing, College of Nursing, University of Baghdad, Baghdad, Iraq.

*Corresponding Author: ali.abd2302m@conursing.uobaghdad.edu.iq

Abstract:

Background and Objectives: Diabetes mellitus (DM) is a very common chronic illness, and a major challenge in insulin therapy adherence is the associated discomfort from injections. This study aims to examine the effect of the coughing technique related to pain reduction and patient satisfaction during insulin injection among Type 2 DM patients. **Method and Materials:** This was a randomized controlled experimental study conducted from September 2024 to January 2025. The study included 69 hospitalized adults with Type 2 DM receiving subcutaneous insulin injections. Participants were divided into a Coughing group (n=38) and a Control group (n=31). Data were collected using the Visual Analog Scale (VAS) for pain and satisfaction⁵. In the Coughing group, participants were instructed to inhale deeply and cough to expel air before needle insertion, and again as the needle was introduced⁶.

Results: A statistically significant disparity was observed between the groups regarding the mean scores of the VAS pain ($p<.000$) and injection satisfaction ($p<.004$). The coughing technique was found to be more efficacious in alleviating pain and enhancing satisfaction during subcutaneous insulin injections when evaluated against the control group.

Conclusions: This study demonstrates evidence supporting the Coughing Technique as an easily implemented, low-cost, and non-invasive intervention. Integrating this technique into clinical practice has the potential to enhance patient comfort and contentment throughout subcutaneous insulin injections, leading to improved patient care.

Keywords: Coughing technique, Pain Intensity, Patient Satisfaction, Type 2 Diabetes Mellitus.

■ Paper 10:

Pain and Satisfaction among Type 2 Diabetic Patients: Effects of Coughing, ShotBlocker and Vibration during Insulin Injection: A Randomised Controlled Trial (published)

Ali Dhahir Abdulyemmah¹, Haider Mohammed Majeed¹

¹ Department of Anesthesia, AlSafwa University, Karbala, Iraq.

² Department of Adult Nursing, College of Nursing, University of Baghdad, Baghdad, Iraq.

*Corresponding Author: ali.abd2302m@conursing.uobaghdad.edu.iq

Abstract:

Diabetes mellitus (DM) is a chronic, progressive, and debilitating illness, and the discomfort associated with insulin injections is a predominant factor impeding patient adherence to therapy; the study aimed to evaluate the effects of the coughing technique, ShotBlocker, and vibration device on pain intensity and patient satisfaction during subcutaneous (SC) insulin injections in hospitalized adults with Type 2 Diabetes Mellitus (T2DM). A total of 140 adult patients with T2DM were randomly assigned to four groups (ShotBlocker, Vibration, Coughing, and Control), and pain and satisfaction were measured using the Visual Analogue Scale (VAS). There were statistically highly significant differences in both pain and satisfaction scores among all intervention groups compared to the control group, with the vibration group showing the lowest pain scores and the highest satisfaction scores. Specifically, there was a statistically significant difference in satisfaction between the Vibration group and the Cough group ($P=0.032$), favoring the vibration technique. The conclusion is that the coughing technique, ShotBlocker, and vibration device are effective, non-invasive methods for significantly reducing pain and enhancing patient satisfaction during SC insulin injections in adults with T2DM.

Keywords: Coughing technique, pain intensity, patient satisfaction, Shot-Blocker, type 2 diabetes mellitus, vibration.

■ Paper 11:

Assessment of Certain Anti-Obesity Medications' ability in decreasing BMI of Obese Subjects in Karbala Province

Osama Q. Fadhil¹, Sana Abdul-Jabbar Ali², Hussam H. Tizkam³

¹ Al Safwa College University, Iraq. ² Al-Nahrain University, Iraq. ³ Al Safwa College University, Iraq.

Abstract:

Background: Obesity is on the rise and is one of the leading causes of illness and death worldwide. Since obesity is a chronic, complex, and heterogeneous condition impacted by biochemical, developmental, genetic, and environmental factors, treatment must be integrated and comprehensive. Controlling excess body fat is one of the largest issues facing healthcare today. Nevertheless, the treatment of obesity itself has shown itself to be mostly resistant to therapy, and anti-obesity medications (AOMs) often have low effectiveness. Obesity is on the rise and is one of the leading causes of illness and death worldwide. It is crucial to manage obesity since it is a chronic, complex, and varied disorder influenced by biological, developmental, genetic, and environmental factors. Aim of study: Evaluating how well anti-obesity medications used in Iraqi pharmacies work to lower the BMI of obese people in the province of Karbala. Method: A no. of 157 obese subjects their ages ranged between 13-67 year. Composed of 54 males and 103 females. Metformin taken by 19 subjects, liraglutide taken by 14, semaglutide taken by 15 and orlistat taken by 10 subjects. A combination of orlistat and metformin taken by 99 subjects. The comparison done by comparing the mean difference in BMI of the five medication groups using t-test.

Results: orlistat decrease the BMI by 4.7 ± 1.5 units, semaglutide and liraglutide decrease the BMI by 3.3 ± 0.3 and 3 ± 0.8 units respectively. Metformin decreases the BMI by 1.4 ± 0.6 units and the combination of metformin with orlistat gave 6.4 ± 2.9 decrement.

Conclusion: The combination of orlistat and metformin has the highest effectiveness in decreasing BMI in obese subjects. Orlistat alone came later, followed by semaglutide and liraglutide which are comparable to each other. Metformin has the lowest effectiveness in decreasing BMI of obese subjects.

Keywords: obesity, anti-obesity medications, metformin, orlistat, semaglutide

■ Paper 12:

Serum Irisin and Asprosin Levels as Potential Biomarkers an Type 2 Diabetes Mellitus and its Renal Complications: A Biochemical Investigation of Hormonal and Metabolic Profiles

Aqeel M. Rasool^{1*}, Alaa Hussein J. Al-Qaisi²

¹ Ministry of Education, Directorate of Education Al-Muthanna, Al-Samawah, Al-Muthanna, Iraq. ² Department of Chemistry, College of Science, Al-Nahrain University, Jadriya, Baghdad, Iraq. *Corresponding Author Aqeel M. Rasool: aqeelchem122@gmail.com

Abstract:

Aims: This study investigates the levels of asprosin and irisin in patients with type 2 diabetes mellitus (T2DM) and diabetic nephropathy (DN), and evaluates their relationships with insulin resistance, glycemic control, and renal function. Additionally, it explores their diagnostic performance as potential non-invasive biomarkers for the early detection of DN using ROC curve analysis.

Methods: A controlled prospective study was conducted involving 130 participants, categorized into healthy controls, T2DM patients, and T2DM with DN. Serum asprosin, irisin, and insulin levels were measured using ELISA, while biochemical and renal parameters such as fasting blood glucose, HbA1c, creatinine, urea, and eGFR were assessed using standard spectrophotometric techniques. ROC analysis was employed to assess the diagnostic accuracy of asprosin and irisin.

Results: Asprosin levels were significantly elevated, while irisin levels were markedly reduced in DN patients compared to T2DM and control groups ($p < 0.001$). Moreover, DN patients exhibited higher levels of fasting glucose, HbA1c, HOMA-IR, creatinine, and urea, with lower eGFR, indicating substantial renal dysfunction. ROC analysis revealed that asprosin had an AUC of 0.910 (95% CI: 0.839–0.981), with 90.0% sensitivity and 88.9% specificity at a cutoff value of 11.27 ng/mL. Irisin showed an AUC of 0.886 (95% CI: 0.812–0.960), with 95.0% sensitivity and 71.1% specificity at a 158.25 ng/mL cutoff.

Conclusion: Asprosin and irisin are strongly associated with insulin resistance and renal impairment in patients with T2DM and DN. Their high diagnostic performance supports their utility as promising non-invasive biomarkers for the early detection and monitoring of diabetic nephropathy progression.

Keywords: Adipocytokine, Asprosin, Diabetic nephropathy, Insulin resistance, Irisin.

■ Paper 13:

Comparison between Basal/Bolus Insulin and premixed insulin on blood glucose control in patient with type 1 Diabetes Mellitus rate of hospitalization due to ketosis

Najwa kahtan Hadi 1*

Al Safwa University

Corresponding Author: najwa.qahtan@alsafwa.edu.iq

Background:

Chronically high blood glucose (BG) and aberrant carbohydrate, lipid, and protein metabolism characterize diabetes mellitus (DM). Untreated DM may cause acute complications including DKA and HHS. Chronic hyperglycemia may cause neuropathy, microvascular damage, and macrovascular issues.

Objective: In this study, researchers looked at the occurrence of diabetic ketoacidosis (DKA), severe hypoglycemia, and glycemic control in T1DM patients on basal-bolus or premixed insulin.

Material And Method: A retrospective analysis of 307 type 1 diabetics from four hospitals in Karbala, Diwaniya, Baghdad, and Imam Alhassan from August to October was conducted. Patients aged three to sixty used basal-bolus or premixed insulin regimens. During follow-up, DKA, severe hypoglycemia, and HbA1c improvement were monitored. Result: The two groups were matched, with 170 patients receiving a premixed regimen and 137 patients receiving a basal-bolus regimen. In comparison to patients who received a basal/bolus regimen, those who received a premixed regimen had much greater incidence of DKA (30%-27.7%: p value 0.046 vs.) and severe

hypoglycemia episodes (11.1 vs 10.2%; p value <0.0001). Blood glucose levels, both at random and after fasting, were used to identify episodes of hyperglycemia. Patients given a premixed regimen were significantly more likely to have high blood sugar levels (37.6% vs. 34.3%; $p < 0.0001$), in contrast to those given a basal/bolus regimen. A higher rate of hospital admission was observed in patients receiving a premixed regimen (59.4% vs 56.2%, $p < 0.208$) when compared to patients receiving a basal/bolus regimen. In both matched groups, the median HbA1c level was better with the basal-bolus regimen than with the premixed regimen (5.8% vs. 10.2%, $p < 0.73$).

Conclusion: Compared to patients on a premixed insulin regimen, those on a basal-bolus regimen have better blood sugar management, fewer episodes of dangerously low blood sugar (DKA) and severe hypoglycemia, and lower rates overall.

Keywords: Insulin Diabetes mellitus Type 1 Diabetic ketoacidosis Hemoglobin A1c.

■ Paper 14:

Incidence, risk factors and prevention of post thyroidectomy hypocalcemia

Abdulrazzaq Kalaf Hassan^{1*}, Ahmed Eidan Kadhim²

1 Al-Ameed University / collage of medicine

*Corresponding Author: abdulrazzak2006@yahoo.com

Abstract:

Background: Thyroid surgeries are among the most commonly performed procedures worldwide. Hypocalcemia following thyroid surgery is a frequent complication that can range from asymptomatic to life-threatening, and it can sometimes be challenging to manage. This condition may result in prolonged hospitalization.

Aim of the study: The aim of this study is to determine the incidence of hypocalcemia following thyroidectomy and identify the factors associated with it, in order to facilitate early management, prevent complications, and enable

appropriate treatment.

Methods: A prospective observational study was conducted in the surgical departments of two hospitals (Imam Hussein Medical City and Safer Al Imam Al Hussein Surgical Hospital) in the holy city of Karbala over a period of one year, from January 2024 to December 2024. A total of 80 patients with different thyroid pathologies who underwent total or near-total thyroidectomy were included in the study. All surgeries were performed by seven surgeons using the same technique. Risk factors analyzed included pre-operative and post-operative biochemical blood parameters, clinical effects, and factors related to surgery, the patient, and the disease. A structured questionnaire was developed to collect data from participants, and the data were entered into a computerized database.

Results: The study included 80 thyroidectomy patients, with a mean age of 39.24 ± 13.61 years (range: 13-82 years). Of the total sample, 72 were females (90%) and 8 were males (10%). More than half of the participants (55%) reported having a history of the disease for two years or more. A history of diabetes was found in 6 patients (7.5%), and hypertension was present in 15 patients (18.8%). A history of thyroxine use, anti-thyroid drugs, or preoperative calcium supplementation was reported in less than 10% of the sample (7.5%, 8.8%, and 7.5%, respectively). Additionally, 23 patients (28.8%) reported preoperative vitamin D supplementation. Post-operative hypocalcemia occurred in 23 patients (28.8% of the total sample). Transient hypocalcemia was observed in 22 patients (27.5%), while only one patient (1.3%) experienced permanent hypocalcemia. Factors associated with a higher incidence of hypocalcemia included hyperthyroidism, thyroiditis, total thyroidectomy, reoperation, malignancy, and the identification of fewer parathyroid glands during surgery.

Conclusion: Thyroid dysfunction, fewer parathyroid glands identified during surgery, positive antibody titers, and conditions like thyroiditis and papillary thyroid carcinoma, as well as total thyroidectomy, repeat surgeries, and central neck dissection, all increase the risk of postoperative hypocalcemia. Identifying and preserving parathyroid glands during surgery, along with preoperative supplementation of vitamin D and calcium in deficient patients, can reduce this risk.

Keywords: Incidence, thyroidectomy, hypocalcemia.

■ Paper 15:

Prevalence and Awareness of Diabetes Risk Factors and Complications Among Iraqi Adults Aged 40 Years and Above: A Cross-Sectional Study

Alaa Alsajri^{1*}, Fatima SAAD¹, Sura BASIM¹, Sarah MUNIEM¹, Tabarak WAAD¹

¹ Department of Pharmacy, Al-Rasheed University College, Baghdad, Iraq.

*Corresponding Author: Alaa Alsajri: alaa.hussein@alrasheedcol.edu.iq

Background: Diabetes mellitus (DM) is one of the most prevalent non-communicable diseases worldwide and a major public health concern in Iraq. Despite the rising burden of diabetes across the Middle East and North Africa (MENA) region, public awareness of its risk factors and complications remains suboptimal. Assessing awareness levels among adults, particularly those aged 40 years and above, is essential for planning effective prevention and education programs.

Methods: A community-based cross-sectional study was conducted between March and July 2025 among Iraqi adults aged ≥ 40 years. Data were collected using an online structured questionnaire distributed via social media platforms. The survey assessed sociodemographic and health characteristics, self-reported diabetes status, and awareness of diabetes risk factors and complications. Awareness scores were categorized into “high” and “low” levels. Associations between awareness and participant characteristics were examined using chi-square tests, and predictors of high awareness were identified using multivariable logistic regression. Statistical significance was set at $p < 0.05$.

Results: Among 422 participants, the prevalence of self-reported diabetes was 42.2%. Overall awareness of diabetes risk factors and complications was moderate, with variations across sociodemographic groups. Higher awareness was associated with higher income, education, and medical-field background. In multivariable analysis, income was the only independent predictor of high risk-factor awareness.

Conclusions: This study reveals moderate awareness of diabetes risk factors and complications among Iraqi adults aged 40 years and above. Targeted educational programs focusing on lower-income and less-educated groups are urgently needed to enhance diabetes literacy, promote early screening, and

reduce preventable complications in Iraq.

Keywords: diabetes mellitus, awareness, risk factors, complications, Iraq, health literacy.

■ Paper 16:

Impact of ABCB1 Genetic Polymorphisms on Therapeutic Response and Safety of Atorvastatin in Iraqi Dyslipidemia Patients

Sarah Alaa Fadhil¹, Noor D. Aziz², Shaima Jabbar^{3*}, Riyadh Mustafa Murtadha Al-Shehristani⁴

¹ The graduate program of the pharmacology and toxicology department/Pharmacy College, Kerbala University, Karbala, Iraq.

² Department of Clinical Pharmacy, Pharmacy College, Kerbala University, Karbala, Iraq.

³ Pharmacology and Toxicology Department/Pharmacy College, Kerbala University, Karbala, Iraq.

⁴ College of Medicine, Al-Ameed University, Karbala, Iraq.

*Corresponding Author: Shaima Jabbar: shaymaa.a@uokerbala.edu.iq

Abstract:

Objective: The aim of this study is investigating ABCB1 genetic polymorphism (rs1045642) and (rs2032582) in Iraqi patient with Dyslipidemia receiving daily oral doses of 40 mg of atorvastatin and to determine the effect of genetic polymorphism of ABCB1 on atorvastatin efficacy and safety.

Methods: The cross-sectional observational study involved 150 male and female patients diagnosed with dyslipidemia and who were received atorvastatin 40mg per day as monotherapy. demographic information, such as age and body mass index, as well as duration of therapy are collected from each patient. Lipids profiles were evaluated.

Result: The distribution of genotypes revealed high frequencies of TT (60%) for rs1045642 and GG (50%) for rs2032582, both in Hardy–Weinberg equilibrium ($p = 0.0001$). For rs1045642, carriers of the T allele showed a more

favorable lipid response: males exhibited significantly lower total cholesterol ($p = 0.0225$) and LDL-C ($p = 0.0177$), while females showed higher HDL-C ($p = 0.0199$) and lower triglycerides ($p = 0.0348$). The same variant was also linked to lower ALT and AST levels, indicating a possible hepatoprotective effect. In contrast, for rs2032582, mutant carriers (T/A) — particularly males — demonstrated higher TC, TG, and LDL-C levels ($p < 0.05$), suggesting reduced atorvastatin efficacy. Two-way ANOVA confirmed significant effects of gender and genotype, and an interaction between them for HDL-C and LDL-C responses.

Conclusion: The findings indicate that ABCB1 polymorphisms modulate the lipid-lowering efficacy and hepatic safety of atorvastatin in a gender-dependent manner. The rs1045642 T allele appears to enhance treatment response and reduce hepatotoxicity, whereas the rs2032582 T/A variant may predict a poorer lipid response. Incorporating ABCB1 genotyping into clinical assessment could support personalized statin therapy in dyslipidemia management among Iraqi patients.

Keywords:

Atorvastatin; Dyslipidemia; ABCB1; rs1045642; rs2032582; Pharmacogenetics; Lipid profile; Hepatotoxicity.

■ Paper 17:

The Modulatory Effects of Brazil Nuts (*Bertholletia excelsa*) on Thyroid and Salivary Gland Histopathology in Hypothyroid Conditions

Farah Jawad Al-masoudi¹, Mahmood N. Hammood², Karrar Hussein Al-Kuraiti²

¹ Department of Biomedical Engineering, College of Engineering, Karbala University, Karbala, Iraq.

² Ministry of Education, General Directorate of Education in Karbala, Iraq.

*Corresponding Author: Farah Jawad Al-masoudi: farah.j@uokerbala.edu.iq

Abstract:

Background: In hypothyroidism, a common endocrinopathy that has been associated with reduction in salivary gland function and systemic health, the present study was aimed to evaluate the protective effect of Brazilian nut supplementation on this condition.

Methods: Experimental hypothyroidism was produced in twenty-four adult male Albino rats by oral administration of carbimazole ($20 \text{ mg} / \text{kg} / \text{day}$) for four weeks, and then subjected to an eight-week recovery period with or without 10% Brazil nut-supplemented diet. Control animals were treated with distilled water or the Brazilian nut diet only. Blood and tissue samples were collected for biochemical analysis, the salivary gland and thyroid glands were removed for histopathologic examination. **Results:** in the present study, hypothyroidism caused by carbimazole resulted in marked thyroidal follicular distortion, vascular congestion and shrinkage of the parotid acini with disordered ducts, significant thyroid histopathological alterations, including increased follicular diameter ($p < 0.05$) and decreased epithelial thickness ($p < 0.05$), accompanied by a characteristic hormonal imbalance of elevated TSH and reduced T3 and T4 levels significantly ($p < 0.05$). Supplementation with *B. excelsa* significantly reversed the normal structure of both thyroid and salivary glands; in which follicles and acini were well-organized. These histological ameliorations were associated with marked recovery of serum thyroid hormones and TPO activity, reaffirming the therapeutic potential and protractive properties of *B. excelsa* in counteracting hypothyroidism-induced alterations.

Conclusion: The results of the present study demonstrated that supplementation with brazil nut was able to completely revert thyroid and salivary gland damage, also restoring serum thyroid hormone levels in carbimazole-induced hypothyroidism, suggesting its use as adjunctive natural therapy for promoting gland recovery.

Keywords: Brazil Nuts, *Bertholletia excelsa*, hypothyroidism, Thyroid Gland, Salivary Gland, thyroid hormones.

■ Paper 18:

Knowledge, Attitude, and Practice Regarding Diabetes Mellitus among Patients with Diabetes

Lamya A A Darwish¹, Ali Abutiheen², Mohammed Al-shadeedi³, Ali Delfi³, Batool F FaraJ³, Ruqayah z Shuaib³

Zahraa A Chasib³, Kadhim H Jasim³.

¹ Assistant Professor in Internal Medicine, Vice Chair & clinical Programme Director in Internal Medicine, Al Ameer University; lamya.aalkarem@alameed.edu.iq

² Professor of Family Medicine, Department of Family and Community Medicine, College of Medicine, University of Kerbala/ aliabutiheen@uokerbala.edu.iq

³ Final year medical students in Al Ameer University, Faculty of Medicine
Corresponding address: lamya.aalkarem@alameed.edu.iq (Under revision)

Abstract:

Background: Diabetes mellitus (DM) is a major global health challenge, particularly in developing countries like Iraq, where its prevalence has risen sharply due to lifestyle changes and limited access to education. Effective self-management of DM is crucial to reduce its complications, and this relies heavily on patients' knowledge, attitudes, and practices (KAP) toward the disease.

Objective: To assess the knowledge, attitudes, and practices regarding DM among diabetic patients attending hospitals in various Iraqi provinces.

Methods:

A cross-sectional study was conducted from March to December 2023 in hospitals across Baghdad, Karbala, Babylon, and Salahuddin. Using a structured questionnaire, 279 diabetic patients were assessed for demographics, knowledge, attitudes, and self-care practices.

Results: Most participants were female (52.7%), the mean age was 54.22 years. The majority (67%) had average knowledge of diabetes, with significantly higher mean knowledge scores among males, urban resident, higher education, employment, and prior attending educational sessions. While 81.4%

correctly defined diabetes and 63.1% knew the normal HbA1c level, only 38% reported engaging in daily physical activity. Although 83.2% adhered to medication, misconceptions were identified—such as 24% believing medication should be stopped during illness. Notably, 80.3% of respondents acknowledged the impact of diabetes on mood and behavior.

Conclusion: Despite a generally satisfactory level of knowledge among Iraqi diabetic patients, significant gaps persist in areas such as risk factor awareness, physical activity, and understanding of treatment principles. These findings underscore the need for culturally tailored educational interventions and public health strategies to enhance diabetes management and reduce associated complications.

Keyword: Diabetes, Knowledge, attitude, Practice, KAP, Iraq

■ Paper 19:

What are the ECG and ECHO findings in hypothyroidism?

Karem Al Tameemi¹, Hameed Al Hibaly¹, Lamy A A Darwish², Nagham Al Hamdani³

correspondence: Professor Kareem Al Tameemi; Kareemaltameemi1965@gmail.com

¹Professor Kareem Al Tameemi: MRCP, PhD Neurology: Faculty of Medicine, College of Medicine, Kerbala University, Iraq

¹Associate professor Hameed Al Hibaly: FICMS (PhD) Medicine Faculty of Medicine, College of Medicine, Kerbala University, Iraq

²Assistant Professor Dr Lamy A Alkarem; MRCP Internal Medicine department, Vice Chair & clinical Programme Director in Internal Medicine, Al Ameed University; lamya.aalkarem@alameed.edu.iq

³Dr Nagham Al Hamdani M.Sc. medical physiology, Diploma in Echocardiography: Al Mussayeb Paediatric Hospital, Babylon health directorate, Iraq (Under revision)

Abstract:

Background: Both ECG and ECHO results are important investigations in the diagnosis and treatment of heart complications in a hypothyroid patients, as these complication have adverse impact on the overall patient's cardiovascular health.

Objectives: To pick up early ECG and echo findings in a sample of Iraqi patients , for early referral for cardiology assessment and treatment with follow up.

Methods: A cross sectional study was designed to evaluate the ECG and ECHO findings in a patients who are newly diagnosed, or previously diagnosed were included in the study. Exclusion criteria was; any patient with a known heart diseases, hypertension, and diabetes. Any other systemic illness that is known to affect the heart such as chronic kidney disease, blood disorders or acute illness are also excluded. The study done at the period from April to October 2025 at 2 big medical clinics.

The data analysis for this work was generated using The Statistical Package for the Social Sciences software, version 28.0 (IBM, SPSS, Chicago, Illinois, USA)

Descriptive statistics was performed on the data of each group. Values were illustrated by n (%) for categorical, Significant differences in categorical variables among the parameters were confirmed through analytical statistical tests.

Results of all hypothesis tests with p values <0.05 (two-side) were considered to be statistically significant

Results: A 58 patients whom diagnosed as hypothyroidism were enrolled in this study. They were 44(75.8%) females and 14(24.1%) males with average age of 45.34 years. ECG findings were recorded in 36 (62%) patients. ECHO findings were registered in 19 (32.7%) of the patients. The most common ECG findings were, sinus bradycardia, low voltage QRS complex and T Wave changes (34.4%, 29.3%, 17.2% respectively). The most common ECHO findings were left ventricular diastolic dysfunction, grade 1 and 2 (46.5%, 18.9% respectively).ECG abnormalities was reported in 17 patients out of 21 patients who had high TSH levels. This figure is highly significant with (a P value of 0.001). ECHO findings were not correlated with TSH level whether it is high or normal. Other variables which had a significant impact on the heart health



whether ECG abnormalities or ECHO changes were age, Duration of hypothyroidism before treatment and gender.

Conclusion and Recommendation: ECG and ECHO changes are common in a hypothyroid patient, these tools are available and easily interpreted. Early detection and referral of these cases are feasible by these simple tools if we looked carefully to these changes. There is significant correlation between ECG findings and the level of TSH hormones. Also there is significant association between ECG findings and the duration of hypothyroid state before giving the treatment.

We recommend ECG and echo study for every patient labeled as hypothyroid state and we recommend early referral of these case to cardiology center to be early treated and prevent cardiovascular complication

Keywords: hypothyroidism. ECG, ECHO



————— Second Theme —————

PHARMACEUTICAL SCIENCES AND THE ADVANCEMENT OF MEDICAL PRACTICE

■ Paper 1:

Evaluation of multifunctional co-processed excipient improvement of tableting performance

Abdullah Fadel Al-Mesbahia |Hassan Thulfikarb |Ali Thoulfikar A. Imeer-
c|Abdulkareem Mohammed|Abdul Amir H. Kadhumc,*|Ahmed A. Al-Am-
iery

aMJFAK Pharma for Pharmaceutical Manufacturing, Doha, Qatar

bCollege of Pharmacy, University of Al-Ameed, Karbala, Iraq

cCollege of Medicine, University of Al-Ameed, Karbala, Iraq

dFaculty of Pharmacy, Omdurman Islamic University, Sudan

eDepartment of Chemical Engineering, Faculty of Engineering, Universiti
Kebangsaan Malaysia, Malaysia

Abstract:

The excipient industry has been associated with the food industry. The food excipients industry products have helped in maintaining high safety practices. The emphasis on purity, regulation, safety, and standards of excipients has led to the formation of an international sector. The International Pharmaceutical Excipients Council (IPEC), which is a triplicate council, has presentations from Europe, the United States, and Japan to synchronize standard requirements concerning purity and functional testing. A new multifunctional co-processed excipient is presented in this study. The aim is to develop and improve tableting performance and produce cost-effective tablet dosage forms. For this study, three compendia excipients were selected as traditionally most frequently used excipients filler /carriers, combined with different proportions, which might lead to the formulation of a new product having better properties compared to the simple physical mixing of the component. Macrolose were prepared with varying percentages of the three excipients (microcrystalline cellulose, lactose monohydrate, and sodium starch glycolate) to evaluate the effect of the optimized new co-processed excipient on the stability and physical properties of the final granulation mixture and the manufactured tablets.

Keywords: Co-processed excipient; tablet formulation; direct compression; tableting performance.

■ Paper 2:

Antimicrobial Synergism between Garamycin and AgNPs Fabricated by *Enterobacter* Sp.

Hussein H. Al-Turnachy¹, Tiba Abdul Muhsen², Mohammed-Sadiq A. Al-shibly³

1 Department of Biology, Faculty of Science, University of Kufa, Iraq (husseinh.abdulla@uokufa.edu.iq)

2 Privat sector (Tibamuhsen02@gmail.com)

3 Privat sector (mstrkmbrt@gmail.com)

*Corresponding Author: Hussein H. Al-Turnachy, Department of biology, Faculty of science, University of Kufa, Kufa, Iraq; Email: husseinh.abdulla@uokufa.edu.iq (Corresponding author)

Abstract:

Antimicrobial resistance is a global issue warns all people on the planet. Health risks are increasing by the growth of infectious disease resistance to antibiotics, health organizations globally allocate huge funds to combat antimicrobial resistance, nanobiotechnology is one of the emerging disciplines involved in updating and founding a new alternative antimicrobial drug. In this study, different effective profile of silver nanoparticles prepared by cell free extract of *Enterobacter* sp. culture to combat some antibiotic resistant bacterial isolates. UV-visible, FE-SEM and AFM results revealed that bacteriogenic silver nanoparticles have peak absorbance at wavelength near 400-420 nm, mean size 32.01 nm, spherical, and homogenous. Antimicrobial activity expressed MIC (0.72 mg/lm) against *Staphylococcus* sp. *Klebsiella* sp. and (1.8 mg/lm) against *Pseudomonas* sp. compared with antibiotics. Weak to no synergim was recorded between AgNPs and Garamycin.

Keywords: Antimicrobial resistance, AgNPs, AFM, FE-SEM, Silver nanoparticles, *Pseudomonas*, *Klebsiella*, *Enterobacter*, *Staphylococcus* .

■ Paper 3:

Utilization of SuperCYPsPred Software for Predicting Drug Interactions Mediated by Cytochrome P450 Isoenzymes in Elderly Patients Receiving Polypharmacy

Furqan Mohammed Abdulelah1*, Ali Hamid Abdulhusein2, Mohamed Abdul Wahab Alwardi3, Shareef Radhi Jawad4, Laith Ghadhanfer Shareef5

1Department of Clinical Pharmacy, College of Pharmacy, Al-Naji University, Baghdad 10011, Iraq; 2Department of Clinical Pharmacy, College of Pharmacy, University of Al-Ameed, Kerbala, Iraq; 3Department of Clinical Pharmacy, College of Pharmacy, Al-Farahidi University, Baghdad, Iraq; 4College of Dentistry, Al-Iraqia University, Baghdad, Iraq; 5Department of Pharmacy, Al-Rasheed University College, Baghdad 10011, Iraq

Received: 3 February 2025; Revised: 15 March 2025; Accepted: 18 March 2025

Abstract:

Background: Increasing polypharmacy and complicated prescription regimens raise the likelihood of CYP-mediated drug-drug interactions (DDIs) in older people.

Objective: To assess the incidence of CYP-mediated DDIs in older people with polypharmacy and examine the correlation between medication dispensation and the likelihood of these interactions in this high-risk group.

Methods: A cross-sectional 17-week analysis was performed, including consecutive new patients aged 65 years and over who were undergoing polypharmacy (defined as the use of more than five medications) at a community pharmacy. The medication profiles of these individuals were evaluated using SuperCYPsPred software and UpToDate® Lexidrug. The frequency of possible CYP-mediated interactions was evaluated. The pharmacists' judgments to suggest prescription adjustments based on the likelihood of CYP-mediated interactions were documented.

Results: The prevalence of possible CYP-mediated drug-drug interactions identified among 220 older persons with polypharmacy was 84.5%. Moderate severity DDIs were the predominant and significant kind of interaction (2.70 ± 3.157). A linear regression analysis was performed to predict the fre-



quency of drug interactions based on the number of drugs. A significant association has been identified ($F(1,14)=67.789, p<0.001$). The predominant CYP isoenzyme was CYP3A4 at 34.6%, followed by CYP2C9 at 21.4% and CYP2D6 at 15.7%, with no notable gender differences. **Conclusion:** The older patients have at least one DDI. Elderly adults taking five or more medicines require frequent care owing to a fourfold greater chance of drug interactions.

Keywords: Elderly, Isoenzymes, Interactions, Prevalence, Polypharmacy.

■ Paper 4:

Insight on Chemical Property Position of Bedaquiline Construed by ChemGPS-NP

Muaaz Mutaz Alajlani

Faculty of Pharmacy, Arab International University, Damascus-11, Syria

Faculty of Pharmacy, Uppsala University, BMC - Biomedical center, Box 574, S-751 23 Uppsala, Sweden.

Muaaz.alajlani@aiu.edu.sy

0046738922722

Abstract:

Bedaquiline is a novel adenosine triphosphate synthase inhibitor anti-tuberculosis drug. Bedaquiline belongs to diarylquinolines a new class of antituberculosis, and has a quite different that is different mechanistically from quinolines and fluoroquinolones. The fact that the relative chemical similarity has produced different mechanisms of action is still not familiar. To improve discrimination for bedaquiline a new approach using eight scores of principle component analysis (PCA) provided by ChemGPS-NP was suggested. These scores are calculated based on 35+1 different physical and chemical properties and demonstrate a clear discrimination from other quinoline members. ChemGPS-NP provided an exceptional nearest 100 compounds from antituberculosis screening sets (accumulative Euclidian distance of 196.83) as compared with different 2D similarity tanimoto methods; extended connective fingerprints

and Molecular ACCess System showing 30% and 182 % increase in accumulative Euclidian distance, respectively. Potentially similar compounds from publicly available antituberculosis compounds and Maybridge sets based on bedaquiline's dimensional similarity and different filtrations were determined and provided as supplementary material of this article.

Keywords: Bedaquilines, Antituberculosis agents, Chemical property space, Screening, Data mining.

■ Paper 5:

Assessment of free radical scavenging and anti-proliferative effects of *Atriplex halimus* extract on MCF-7 Cells

Fouad R. Al-Burki¹, Hayat K. Salman², Fadhil A. Naser¹, Hazim A. Hussein¹, Laith A. Younus¹, Mohammed N. Salman¹

¹Jabir Ibn Hayyan University for medical and pharmaceutical science, faculty of pharmacy, Iraq

²Middle Technical University - Technical Medical Institute, Baghdad, Iraq

Abstract:

Background. This study was conducted to evaluate the anti-proliferation and free radical scavenging effects of the alcoholic extract of *A. halimus* leaves. Many peoples use medicinal plants in traditional medicine because of their diverse biologically active chemical content. *Atriplex halimus* is a saltbush widely used in traditional medicine, which gives it a strong case for further pharmacological research.

Methods: Using the DPPH and ABTS⁺ assays, we verified the antioxidant activity of the alcohol extract of *Atriplex halimus*. Based on the dose-response curve, the results were expressed in Trox equivalent (TEAC) units and the inhibitory concentration (IC₅₀) value was calculated. Cytotoxic activity of the extract against breast cancer cells (MCF-7) was further evaluated using MTT assay after 24 and 48 hours of exposure, against doxorubicin drug as positive control. Data were statistically analyzed and presented as the mean ± standard

deviation of three independent replicates.

Results: The chemical composition of the plant alcoholic extract was first determined using GC MS, and the antioxidant activity was then evaluated using various methods, including DPPH scavenging capacity and ABTS+ scavenging assay, as well as cytotoxicity. Chemical analysis of the alcoholic extract of *Atriplex halimus* revealed a wide range of 54 bioactive compounds, the most abundant of which were scoparone (RT = 22.75, 8.72%): myo-inositol, 2-C-methyl (RT = 19.727, 2.35%): β -l-arabinopyranoside, methyl (RT = 19.194, 19.24%): and benzoic acid, 3-(1-ethoxyethoxy) butyl ester (RT = 19.559, 19.12%).

The results of DPPH assay showed that the alcoholic extract possessed a clear concentration-dependent antioxidant capacity, with the inhibition rate reaching 87.69% and 98.83% at high concentrations of 160 and 320 $\mu\text{g/ml}$, respectively, while the IC_{50} value reached 85.96 micrograms/ml. Regarding the TEAC values, the results showed the highest efficacy at medium concentrations (20-40 $\mu\text{g/ml}$): ranging from 1.99 to 2.20 $\mu\text{mol Trolox/mg}$. The results of the ABTS+ analysis also recorded high averages that were close to ideal, as the concentration of 160 $\mu\text{g/ml}$ gave an average of 93.1% and 98.0% at 320 $\mu\text{g/ml}$.

Conclusion: Through DPPH and ABTS tests, the ethanolic extract of *Atriplex halimus* leaves demonstrated high free radical scavenging activity. It also exhibited dose- and duration-dependent toxic effects against MCF-7 breast cancer cells. The antioxidant and antiproliferative properties of the extract are enhanced with the presence of active compounds like phenols and flavonoids. Although less potent than doxorubicin, the extract is a promising natural candidate for the creation of a low-toxicity adjuvant or alternative medicine.

Practical Implications. These findings generally support the traditional use of selected medicinal plants as a natural source of antioxidants as well as in the treatment of inflammatory conditions and their high capacity to trap free radicals.

Keywords: *Atriplex halimus*, DPPH, ABTS+, TEAC, MCF-7

■ Paper 6:

Association between a glucagon-like peptide-1 receptor genetic polymorphism and therapeutic response to sitagliptin in type 2 diabetic patients: An observational study

Ahmad Nazar Jawad¹ · Kadhim Ali Kadhim² · Zainab Hussein Ali³ · Hayder Adnan Fawzi⁴ · Qusay Baqer Alzajaji⁵

* Kadhim Ali Kadhim

pharm.drkaka75@uomustansiriyah.edu.iq

1 Department of Clinical Pharmacy, College of Pharmacy, Al-Amed University, Karbala 56001, Iraq

2 Department of Clinical Pharmacy, College of Pharmacy, Mustansiriyah University, Baghdad 10052, Iraq

3 Department of Pharmacology, College of Pharmacy, Karbala University, Karbala 56001, Iraq

4 Department of Clinical Pharmacy, College of Pharmacy, AlMustafa University, Baghdad, Iraq

5 Alhassan Metabolism, Endocrine and Diabetes Center (HMEDC), Karbala Health Directorate, Karbala 56001, Iraq

Abstract:

Background: DPP-4 inhibitors are extensively used as oral anti-diabetic medicines. Individual reactions to DPP-4 inhibitors varied significantly, partly due to underlying genetic variation. Given that the glucagon-like peptide-1 receptor (GLP-1R) is involved in the mechanism of action of DPP-4 inhibitors, it has been proposed that a genetic variation of the GLP-1R gene, rs6923761, may influence reactions to DPP-4 inhibitors. Objective The study aims to see how the rs6923761 SNP in the GLP-1R gene affects glycemic outcomes in Iraqi type 2 diabetes patients using sitagliptin. Methods In a cross-sectional observational study, 80 type 2 diabetic patients taking 100 mg of sitagliptin orally for at least 6

months were invited to participate. Diabetes and socio-demographic information were collected. Participants' fasting glucose, insulin, HOMA-IR, HbA1c, and serum creatinine levels were measured. DNA extraction, standard PCR amplification, and Sanger sequencing of PCR products were performed.

Results: This study found a significant difference in the distribution of the rs6923761 SNP between good and poor responders ($p=0.011$), with the A-carrier genotype being more prevalent in patients with poor response. In addition, type 2 diabetics with the minor A allele had worse glycemic parameters and a less favorable response to sitagliptin than those with the wild genotype (GG).

Conclusion: The heterozygous GA and homozygous AA of rs6923761 significantly decreased the likelihood of being a responder to the DPP-4 inhibitor sitagliptin.

Keywords: Glucagon-like peptide-1 receptor - Genetic polymorphism - Sitagliptin - Diabetes mellitus - Sanger PCR

■ Paper 7:

Antiproliferative and Apoptotic Effects of *Solenostemma argel* Leaf Extracts on Colon Cancer Cell Line HCT-116

Abdullah H. Maad1*, Abdullah H. AL-Gamli2, Khaled Sh. Shamarekh3, Moath Refat4 and Mohammed E. Shayoub5

1Department of Pharmaceutical, College of Pharmacy, University of Al-Ameed, Karbala, Iraq.

2Department of Pharmaceutics, Faculty of Pharmacy, University of Science and Technology, Yemen.

3Department of Pharmaceutics, Faculty of Medical Science, Al-Nasser University, Sana'a, Yemen.

4Department of Biochemistry and Molecular Biology, The Key Laboratory of Environment and Genes

Related to Disease of Ministry of Education, Health Science Center, Xi'an Jiaotong University,

Xi'an, China.

5Department of Pharmaceutics, Faculty of Pharmacy, Khartoum University, Khartoum city, Sudan.

Abstract:

Colorectal cancer ranks as the fourth most frequent cause of cancer-related fatalities on a global scale. The present study aims at assessing the anti-proliferative and apoptotic effects of *Solenostemma argel* extract on colorectal cancer cells (HCT-116). The antiproliferative activity was investigated using Sulfo-Rhodamine-B (SRB) assay and the apoptotic effects were demonstrated utilizing acridine orange/ ethidium bromide (AO/EB) staining method. The antiproliferative results demonstrated that the extract exhibited dose-dependent antiproliferative activity, with an IC₅₀ value of 85.3 µg/ml. The apoptosis results clearly demonstrated the ability of the methanolic extract of *Solenostemma argel* in inducing apoptosis in HCT-116 cancer cells. In conclusion, the investigation highlights the considerable antiproliferative and apoptotic impacts of *Solenostemma argel* leaf extract on HCT-116 colorectal cancer cells. This underscores its potential as a promising chemopreventive agent specifically targeting HCT-116 colon cancer cells.

Keywords: Antiproliferation; Apoptosis; Colorectal cancer; HCT-116; *Solenostemma argel*.

■ Paper 8:

Biosurfactants: Properties, applications and emerging trends

Chou-Yi Hsu a, Zaid H. Mahmoud b, Uday Abdul-Reda Hussein c, Dilso-
ra Abduvalieva d, Forat H. Alsultany e, Ehsan Kianfar f

aThunderbird School of Global Management, Arizona State University Tem-
pe Campus, Phoenix, AZ, 85004, USA

bUniversity of Diyala, college of sciences, chemistry, Iraq

cCollege of Pharmacy/ University of Al-Ameed, Iraq

dDepartment of Mathematics and Information Technologies, Tashkent State
Pedagogical University, Bunyodkor avenue 27, Tashkent, 100070, Uzbekistan



eDepartment of Medical Physics, College of Sciences, Al-Mustaqbal University, 51001, Babylon, Iraq

fYoung Researchers and Elite Club, Gachsaran Branch, Islamic Azad University, Gachsaran, Iran

Abstract:

Different microbes release biosurfactants, which are specialists that act on biological surfaces. Biosurfactants are transported to the microbial film or released onto the external film, and they display hydrophilic and hydrophobic locations. A wide variety of industries make use of synthetic chemical surfactants, including those dealing with corrections, medicines, food, agriculture, materials, and more. Chemical surfactants that have been synthesized find use in many different industries, including those dealing with corrections, medicines, food, agriculture, materials, etc. However, these companies unknowingly produce compounds or pollutants that are very toxic and harm the ecosystem. Consequently, biosurfactants have recently attracted a lot of attention from both corporations and analysts. Biosurfactants are environmentally friendly since they are safe, biodegradable, and non-toxic. Because of their unique auxiliary qualities, they are used in many industries and for environmental cleanup. They can withstand higher concentrations of moo basic micelles (CMC), as well as higher temperatures, ionic qualities, and pH, in comparison to their chemical partners. Therefore, in the fields of nutrition, medicines, personal care, and especially enhanced oil recovery (EOR), biosurfactants produced by microbes are favoured over synthetic surfactants. Research on biosurfactants has grown substantially in the last 20 years. Various aspects of biosurfactant production, including their categorization, properties, and uses, evaluation criteria, thermodynamic relationships, Gibbs free vitality conditions, and states of affairs, have been thoroughly reviewed in this article.

Keywords: Surfactants Biosurfactants Surface tension Pollution Biodegradable Thermodynamic Micelles

Paper 9:**PREX proteins level correlation with insulin resistance markers and lipid profile in obese and overweight non-diabetic patients**

N. Hamza^{1*}, A. A. Kasi², W. E. Hameed³

¹Babel Health Directorate, Ministry of Health and Environment, Babel, Iraq;

²Department of Clinical Laboratory Sciences, College of Pharmacy,

University of Baghdad, Baghdad, Iraq;

³Nutrition Clinic Unit, Al-Imam Al-Sadiq Teaching Hospital,

Ministry of Health, Babil, Iraq;

*e-mail: ali.abdulhussein@uobasrah.edu.iq

Abstract:

Metabolic dysregulation and obesity are associated with many metabolic alterations, including impairment of insulin sensitivity and dyslipidemia. Recent studies highlight the key role of phosphatidylinositol 3,4,5-triphosphate-dependent Rac exchange proteins (PREX proteins) in the pathogenesis of obesity, advocating further elucidation of their potential therapeutic implications. The present study aimed to estimate the serum level of PREX proteins and its potential association with insulin resistance markers and plasma lipids level in obese and overweight non-diabetic patients. The study included 30 persons classified as obese, 30 as overweight, and 30 healthy individuals of similar age and gender. The levels of PREX1 and PREX2 were measured using ELISA kits, insulin, fasting glucose, glycosylated hemoglobin and total lipid profile were determined using appropriate photometric kits. HOMA -IR was used as a measure of insulin sensitivity. According to the obtained results, obese non-diabetic patients had higher serum PREX1 level compared to both

overweight and normal-weight individuals. PREX1 correlated positively with the markers of insulin resistance and dyslipidemia. PREX2 level was shown to be lower both in obese compared to overweight patients and in overweight compared to normal-weight individuals. PREX2 correlated negatively with the markers of insulin resistance but not with the markers of dyslipidemia.

Keywords: PREX proteins, obesity, overweight, insulin resistance, dyslipidemia.

■ Paper 10:

Associations of the PPAR α and Lipoprotein Lipase Enzyme Gene Polymorphisms with Dyslipidemia in Obese and Non-obese Males

Rithab Ibrahim Al-Samawi^{1,*}, Thekra A. Al-Kashwan², Abdul Hussein A. Algenabi²

¹Department of Clinical Biochemistry, College of Pharmacy, University of Al-Ameed, Karbala; ²Department of Clinical Biochemistry, College of Medicine, Kufa University, Najaf, Iraq

Background: Peroxisome proliferator-activated receptor α (PPAR α) is a nuclear transcription factor responsible for gene expression, particularly those associated with lipid metabolism. The lipoprotein lipase enzyme (LPL) is considered a key enzyme in lipid metabolism and transport. The link between dyslipidemia and obesity is well understood. Dyslipidemia is also an established risk feature for cardiovascular disease. Thus, it becomes progressively essential to identify the role of genetic factors as risk markers for the development of dyslipidemia among obese males.

Methods: A case-control study was performed including 469 males. Anthropometric characteristics and serum lipid profiles such as triglycerides (TG), total cholesterol (TC), low-density lipoprotein cholesterol (LDL-C), and high-density lipoprotein cholesterol (HDL-C) were evaluated. Genomic DNA extraction and purification were performed using whole blood samples. Restriction enzyme fragment length polymorphism was used to genotype PPAR α and LPL single nucleotide polymorphisms. The associations between these polymorphisms and dyslipidemia were examined.

Results: The CC and CG genotypes of PPAR α gene polymorphisms were significantly associated with higher TC and LDL-C levels ($P < 0.05$). The TT genotype of the LPL gene polymorphism was significantly associated with higher TG levels and lower HDL-C levels ($P < 0.05$). In contrast, the GG genotype may have a protective action against dyslipidemia.

Conclusion: The study reaches the interesting conclusion that there was a significant association between PPAR α as well as LPL gene polymorphisms and dyslipidemia among obese and non-obese males.

Keywords: Obesity, Dyslipidemia, Polymorphism, PPAR alpha, Lipoprotein lipase enzyme .

■ Paper 11:

Universal data-driven models to estimate the solubility of anti-cancer drugs in supercritical carbon dioxide: Correlation development and machine learning modeling

Farag M.A. Altalbawy a b, Nadhir N.A. Jafar c, Dharmesh Sur d, Anupam Yadav e, Subbulakshmi Ganesan f, Aman Shankhyan g, M. Ravi Kumar h, Girish Chandra Sharma i, Iskandar Shernazarov j, Sarah Qutayba Badraldin k, Uday Abdul-Reda Hussein l, Khursheed Muzammil m, Hussein Mahabadi Asl n

aDepartment of Chemistry, University College of Duba, University of Tabuk, Tabuk, Saudi Arabia

bNational Institute of Laser Enhanced Sciences (NILES), University of Cairo, Giza 12613, Egypt

cAL-Zahraa University for Women, College of Health and Medical Technology, Karbala, Iraq

dMarwadi University Research Center, Department of Chemical Engineering, Faculty of Engineering & Technology, Marwadi University, Rajkot, Gujarat 360003, India

eDepartment of Computer engineering and Application, GLA University Mathura, 281406, India

fDepartment of Chemistry and Biochemistry, School of Sciences, JAIN (Deemed to be University), Bangalore, Karnataka, India

gCentre for Research Impact & Outcome, Chitkara University Institute of Engineering and Technology, Chitkara University, Rajpura, Punjab 140401, India

hDepartment of Chemistry, Raghu Engineering College, Visakhapatnam, Andhra Pradesh 531162, India

iDepartment of Applied Sciences-Chemistry, NIMS Institute of Engineering & Technology, NIMS University Rajasthan, Jaipur, India

jDepartment of Chemistry and Its Teaching Methods, Tashkent State Pedagogical University, Tashkent, Uzbekistan



kCollege of Pharmacy, Al-Noor University, Nineveh, Iraq

lCollege of Pharmacy, University of Al-Ameed, Iraq

mDepartment of Public Health, College of Applied Medical Sciences, Khamis Mushait Campus, King Khalid University, Abha 62561, Saudi Arabia

nDepartment of Chemistry, Islamic Azad University, Shiraz Branch, Iran

Abstract:

The current study aims at modeling the solubility of anti-cancer agents in supercritical carbon dioxide (SC-CO₂). An extensive databank, including 893 measured samples for 33 anti-cancer agents were collected from the literature, covering extensive ranges of operating conditions. Eight density-based empirical models were firstly employed to correlate the collected data. After adjusting their constant coefficients, four of them provided satisfactory estimations, with total average absolute relative errors (AAREs) below 10 %. A novel six-parameter empirical correlation was also proposed, with input factors optimized based on the Pearson coefficient analysis. This correlation produced satisfactory results for the analyzed drugs, achieving a total AARE of 7.71 %. Afterward, a generalized and unified model was built using the intelligent method of gaussian process regression (GPR). For the testing data, this model showed excellent results with AARE and R² values of 2.90 % and 99.87 %, respectively. Furthermore, its estimations for all anti-cancer agents outperformed the empirical correlations significantly. Both empirical and intelligent models accurately described the physical behavior of anti-cancer agents' solubility in SC-CO₂ under various conditions. Subsequently, the most effective factors on the performances of the models were recognized through a sensitivity analysis.

Keywords: Anti-cancer agents Solubility Correlation Machine learning Supercritical CO₂

■ Paper 12:

Knowledge, Attitude, and Practice of Parents of Children with Type 1 Diabetes in Karbala City

Zainab Hussein Ali 1

E-mail: Zainab.h.ali@uokerbala.edu.iq

Orcid: 0009-0002-5980-4209

Amal Umran Mosa 1

E-mail:amal.imran@uokerbala.edu.iq

orcid.org/0000-0003-0395-1509

Ahmad Nazar Jawad2

E-mail: ahmad52nazar@gmail.com

Orcid: 0009-0003-5371-5923

Zahraa abed al kareem mohammad ali 1

E-mail: zahraa.alrikaby@uokerbala.edu.iq

Orcid:000-0003-3174-5243

Department of pharmacology and toxicology, College of pharmacy, University of Kerbala. Karbala. Iraq

Department of Clinical Pharmacy, College of Pharmacy, Al Amed University, Karbala, Iraq

Abstract:

Background: Diabetes is described as hyperglycemia, which can occur when fasting or after eating. Diabetes knowledge, attitude, and practice (KAP) evaluation has become essential for directing behavioral adjustments for people with diabetes and those at risk, as the disease's incidence rises globally. Objectives: The goal of this study was to assess the knowledge, attitudes, and practices of parents in holy Karbala city who had children with type 1 diabetes. Materials and **Methods:** A cross-sectional study was performed in Al Hassan Metabolism, Endocrine, and Diabetes Center (HMEDC) in holy Karbala city from August to November 2024 to obtain a representative sample of patient. A questionnaire was developed and administered to evaluated pa-

tients' knowledge, attitude, practice. **Results:** In all, 100 parents whose children were 11.4 ± 3.4 years old on average were evaluated for Kap in relation to diabetes care. 44% just have a primary school diploma. The majority of the sample (56%) lives in rural areas, whereas 44% of them reside in the central region of Karbala. Urban residency was linked to more knowledge ($p=0.003$), while parental education was substantially connected with attitude ($p=0.018$) and practice ($p=0.009$). Interestingly, there was an inverse relationship between practice level and HbA1c ($p=0.046$), highlighting the significance of behavioral treatments for enhancing glycemic outcomes. **Conclusion:** The findings of our study highlight the need for targeted educational and lifestyle interventions to enhance diabetes management.

Keywords: diabetes, Parents knowledge, attitude, and practice

■ Paper 13:

Polypharmacy management in elderly with type 2 diabetes: A Scoping Review of Diabetes-Related Guidelines

Labib AL-Musawel

Department of Clinical Pharmacy, College of Pharmacy, University of Kerbala, Iraq

Waleed Khaled Albahadly

Department of Pharmacology and Toxicology, College of Pharmacy, University of Kerbala, Iraq

Abstract:

The management of polypharmacy requires the elderly with type 2 diabetes (T2D) a patient-centered approach that prioritizes safety, individualized care, and communication among healthcare professionals, patients, and caregivers. To identify the available diabetes treatment guidelines for older adults with T2D via a scoping review to assess their considerations regarding the management of polypharmacy. Published diabetes guidelines between 2013–2023 were indexed in PubMed and adopted through ScienceDirect, Web of Science,

and Cochrane Library. In addition, A search for grey literature with the following resources: World Health Organization, International Diabetes Federation, and several key geriatrics journals. Our search identified 22 publications. Most of these identified guidelines focused on the management and care of diabetes individuals with little focus on the elderly population. The description of polypharmacy varied between the guidelines and converged on the risks, with no clear definition except for one numerical definition. Few clinical recommendations were indicated for screening and managing polypharmacy, and general interventions were proposed with no clear information for health care providers. Several guidelines discussed polypharmacy management in the elderly with T2D are advised in the current literature. They vary in terms of their aims, description, clinical recommendations, interventions, and information. Polypharmacy management in the elderly with T2D is underrepresented; there is a need for a clear description of polypharmacy, assessment of benefits and risk/harm from polypharmacy through an individualized care approach, and identification of who is at risk from polypharmacy in this population.

Keywords: elderly, Type 2 diabetes, polypharmacy, guidelines

■ Paper 14:

Preparation And Characterization Of Carboxymethyl Millet Starch And Pregelatinized Millet Starch

YUSRA AHMED1, ABDULLAH H MAAD2,3, LAYTH ABDULLAH ZAINY2, HASSAN ALI HASSAN1, ZUHEIR OSMAN1

1Department of Pharmaceutics, Faculty of Pharmacy, University of Khartoum, Khartoum, Sudan

2Department of Pharmaceutics, College of Pharmacy, University of Al-Ameed, Karbala, Iraq

3Department of pharmacy practice, College of Clinical Pharmacy, Hodeidah University, Al-Hodeidah, Yemen

Abstract:

Objectives: The aim of this study was to prepare and characterize the physical and chemical characteristics of carboxymethylated millet starch and pregelatinized millet starch to evaluate their improved applications over native millet starch.

Methods: Carboxymethylated millet starch and pregelatinized millet starch were prepared and assessed for various physicochemical properties. Tests were conducted for moisture content, moisture uptake, pH, amylose content, swelling capacity, hydration capacity, degree of substitution, and micromeritic properties using standardized techniques.

Results: The measured properties for carboxymethylated millet starch and pregelatinized millet starch were as follows: Moisture content was 4.2% and 4.8%; moisture uptake was 32.4% and 12.3%; pH was 7.6 and 6.3; and amylose content was 14.7% and 19.9%, respectively. Carboxymethylated millet starch had a degree of substitution of 0.20 and was completely soluble in water, while pregelatinized millet starch exhibited a swelling capacity of 4.7, a hydration capacity of 6.8, and demonstrated good flow and compressibility.

Conclusion: Both carboxymethylated millet starch and pregelatinized millet starch exhibit enhanced properties that make them suitable for broader applications in pharmaceutical formulations than native millet starch.

Keywords: Carboxymethyl millet starch, Modification, physicochemical characteristics, Pregelatinized millet starch.

■ Paper 15:**Evaluating Magnesium Sulfate for Labor Pain Management in Primiparous Women**

Kuanysh Syman^{1*}, Uday Abdul-Reda Hussein², Thoraya Mahbas Diwan³, Hussam H. Tizkam⁴, Israa Abed Jawad⁵, Abdalnaser Saud⁶, Imad Ibrahim Dawood⁷, Nagat Salah Shalaby⁸, Yegeubayeva Salamat Sabitovna⁹

1. Abai Kazakh National Pedagogical University, Almaty, Kazakhstan

2. College of Pharmacy, University of Al-Ameed, Karbala, Iraq

3. Al-Manara College for Medical Sciences, Maysan, Iraq
4. Al-Safwa University College, Karbala, Iraq
5. Department of Education, Al-Nisour University College, Baghdad, Iraq
6. Al-Hadi University College, Baghdad, Iraq
7. Department of Education, Mazaya University College, Nasiriyah, Iraq
8. College of Nursing, National University of Science and Technology, Dhi Qar, Iraq
9. Almaty Technological University, Almaty, Kazakhstan

Abstract:

Background & Objective: Labor pain management is crucial in obstetric care. Magnesium sulfate ($MgSO_4$) has been identified as a potential analgesic due to its muscle relaxant and neuroprotective properties. This study evaluated the efficacy of intravenous magnesium sulfate in reducing labor pain among primiparous women, hypothesizing that $MgSO_4$ would not significantly impact labor pain intensity compared to a placebo.

Materials & Methods: In this double-blind trial at Al-Yarmouk Educational Hospital, 60 primiparous women were randomized to receive either $MgSO_4$ (4 g intravenous loading dose, followed by 1 g/hour maintenance) or placebo during early active labor. Pain intensity was assessed using a Visual Analog Scale (VAS) at 30-minute intervals for two hours post-administration. Secondary outcomes included labor duration, need for additional analgesia, and maternal satisfaction. Data were analyzed using independent t-tests and chi-square tests.

Results: No significant differences were observed in pain intensity reduction, labor duration, requirement for additional analgesia, or maternal satisfaction between the $MgSO_4$ and placebo groups at any time point post-administration. Both groups demonstrated comparable safety profiles, with no serious adverse effects reported.

Conclusion: Intravenous $MgSO_4$, at the dosage used in this study, did not significantly reduce labor pain intensity, affect labor outcomes, or improve maternal satisfaction compared to placebo in primiparous women. These findings highlight the complexity of labor pain management. Further research is warranted to explore different dosages, administration timings, or combina-

tions with other strategies to fully understand $MgSO_4$'s potential role in obstetric analgesia.

Keywords: Labor Pain, Magnesium Sulfate, Pain Management, Double-Blind Method

■ Paper 16:

A Critical Review and Research Agenda on the Environmental Fate and Ecotoxicological Risk of Therapeutic Biologics (Monoclonal Antibodies, Antibody-Drug Conjugates, and Fragments) in Aquatic Systems

Al-Hassan Talib Waly¹, Hussein Salmaan Qasim²

¹Department of radiology Techniques, College of Health and Medical Technologies, Middle Technical University, Baghdad, Iraq

²Department of Microbiology, College of Science, Al-Karkh University for Science, Baghdad, Iraq

*Corresponding author's email: al-hassan.talb@mtu.edu.iq

Abstract:

Background: The swift proliferation of therapeutic biologics, especially monoclonal antibodies (mAbs) and antibody-drug conjugates (ADCs), has transformed contemporary medicine. Nonetheless, their escalating clinical application and extensive manufacture provoke apprehensions about their inadvertent environmental discharge and ecotoxicological effects. In contrast to small-molecule medicines, biologics exhibit distinct molecular characteristics that complicate current environmental risk assessment (ERA) frameworks.

The Objective: this review is to objectively analyze the environmental destiny, persistence, and ecotoxicological dangers of therapeutic biologics in aquatic ecosystems. It seeks to identify knowledge deficiencies, assess existing regulatory frameworks, and recommend a prospective research plan.

Methodology: A systematic literature study was performed utilizing peer-reviewed publications, regulatory guidelines, and industry reports published

from 2000 to 2025. Analyzed key issues encompass pharmacokinetics, environmental introduction pathways, biodegradation, bioaccumulation, and toxicity to aquatic organisms. Particular emphasis was placed on ADCs because of their tripartite composition (antibody, linker, cytotoxic payload).

Results: Findings suggest that whereas intact antibodies exhibit negligible direct toxicity, their designed stability undermines the presumption of rapid biodegradability. ADC payloads, intended to interfere with conserved biological functions, present considerable ecotoxicological hazards even at minimal doses. The existing monitoring and ERA systems are insufficient to tackle these challenges.

Conclusions: The environmental safety of therapeutic biologics is inadequately researched and undervalued. Future initiatives must include uniform destiny testing, comprehensive ecotoxicity profiling, sophisticated detection techniques, and the upgrading of regulations. Collaboration across multiple sectors is crucial for achieving therapeutic innovation and environmental conservation.

Keywords: Monoclonal antibodies, Antibody-drug conjugates, Environmental fate, Aquatic ecotoxicology, Biopharmaceuticals, Emerging contaminants.

■ Paper 17:

Anastrozole Nanoparticles for Transdermal Delivery through Microneedles: Preparation and Evaluation

Kamil K. Atiyah Altameemi^{1,*}, Ph.D. Prof. Shaimaa N. Abd-Alhammad²,

¹Ministry of Health, Thi-Qar Health Directorate, Thi-Qar, Iraq.

²Ph.D. Professor of pharmaceutics, University of Baghdad, College of pharmacy, Baghdad, Iraq

Abstract:

This study examined transdermal anastrozole (ANA) as an oral alternative. ANA is a nonsteroidal aromatase inhibitor licensed to treat breast cancer and metastatic disease. Estrogen makes breast cancer worse. However, ANA is only available as a once-daily oral tablet. In this work, dissolving micronee-

dles that were loaded with ANA polymeric nanoparticles allowed for the transdermal distribution of anastrozole.

Method: ANA polymeric nanoparticles were created by the nanoprecipitation process utilizing the polymeric matrix kollicoat MAE100-55, and their physical characteristics and in-vitro release were investigated. Using different water-soluble polymers and the micro-molding method, four formulas of dissolving microneedles loaded with ANA polymeric nanoparticles were created. Additionally, the prepared needles' morphology, mechanical strength, moisture uptake percentage, and moisture loss percentage were examined.

Result: The ANA polymeric nanoparticles are 50.49 ± 7.9 nm in size, have a polydispersity index of 0.19 ± 0.07 , and have an entrapment efficiency of $75 \pm 4.5\%$. While employing poloxamer188 as a stabilizer, complete drug release took place in 3.5 hours. Among the various polymers used to make dissolving microneedle formulas, M-2 made from PVA demonstrated superior mechanical strength, moisture loss percentage, and moisture uptake. Ex vivo permeation through abdominal rat skin confirmed the penetration-enhancing impact of microneedles as permeation increased by 4.9 times compared to bare skin. Histology found no inflammatory reactions or cellular pathology with needle penetration.

Conclusion: It was possible to successfully manufacture polymeric nanoparticles of ANA and load them onto dissolving microneedles with sufficient mechanical strength to penetrate the stratum corneum and permit nanoparticle transdermal delivery.

Keywords: Anastrozole, Polymeric nanoparticles, Dissolving microneedles.

■ Paper 18:

Synthesis of novel acylated and esterified ciprofloxacin derivatives as efficient anticancer and antimicrobial agents.

Gheith M. Alasadi¹ and Zaid Al-Obaidi^{□ 2,3*}

¹Department of Pharmaceutical Chemistry, College of Pharmacy, Mustansiriyah University, Baghdad, Iraq,

²School of Biosciences, College of Health and Life Sciences, Aston Univer-

sity, Birmingham,

United Kingdom, 3Department of Chemistry and Biochemistry, College of Medicine, University of Kerbala, Karbala, Iraq

Abstract:

Nowadays, various factors enhance the resistance of some microbes to antibiotics. Irrational antibiotic use is considered an example of such factors.

Therefore, the synthesis and reporting of heterocyclic compounds with multiple biological properties are of considerable value. Ciprofloxacin is an antibiotic used to treat infections. New amidification and esterification derivatives of ciprofloxacin were synthesized. Their structure was identified and confirmed using both proton and carbon-13 nuclear magnetic resonance, mass spectrometry, and elemental analysis. With the employment of MTT (3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyl-terazoliumbromide) methods, *in vitro* anticancer activity was evaluated. The utilization of clinical and laboratory standards institute (CLSI) instructions was involved in the *in vitro* antimicrobial activity evaluation of the newly synthesized derivatives. In terms of anticancer activity, cell proliferation, viability, and IC₅₀, as well as antimicrobial activities, IZD (Inhibition Zone Diameter), MIC (Minimum Inhibitory Concentrations), MBC (Minimum Bactericidal Concentrations), and MFC (Minimum Fungicidal Concentration) were measured and reported. The lowest cell proliferation and viability and IC₅₀ for 2,3-dihydroxypropyl 1-cyclopropyl-6-fluoro-4-oxo-7-(piperazin-1-yl)-1,4-dihydroquinoline-3-carboxylate (compound 5) were observed to be 27.12% and 7.83 µg/mL. In antimicrobial activity, the lowest MIC for 2,3-dihydroxypropyl 7-(4-benzoylpiperazin-1-yl)-1-cyclopropyl-6-fluoro-4-oxo-1,4-dihydroquinoline-3-carboxylate (compound 6c) was observed to be 2 µg/mL (against *Proteus mirabilis*) and the lowest MIC for 1-cyclopropyl-6-fluoro-7-(4-(4(methylthio)benzoyl)piperazin-1-yl)-4-oxo-1,4-dihydroquinoline-3-carboxylic acid (compound 3d) was observed to be 32 µg/mL (against *Candida albicans*, *Aspergillus fumigatus*). The effects were compared with commercially available drugs, and it was observed that some derivatives have the same efficacy as abemaciclib, which is used to treat breast cancer. Some derivatives were more effective than Cefazolin and Tolnaftate, well-known antibiotics and antifungals, respectively. Finally, a fairly clear relationship between the structure of the derivatives and their biological effectiveness was observed.

Keywords: ciprofloxacin, amidification, esterification, anticancer, antimicrobial.

■ Paper 19:

Identification of Three Candida species Isolated from Diabetic Patients Infected with Candiduria and Testing Them against Some Antifungal Agents.

Farah Abed Saad and Dhurgham Ali Alhasan

Department of Microbiology, College of Veterinary Medicine, University of Shatrah, Iraq

Corresponding author email: farah.a.saad@shu.edu.iq

Abstract:

This study was conducted in the laboratories of veterinary medicine college, University of Shatrah and revealed that three of Candida species were detected in collected urine specimens of the diabetic patients infected with candiduria. Candida species appeared different color on Candida Chromaagr medium in which germ tube forming Candida species produced green colonies. Additionally, these species formed white – creamy colonies on Sabouraud dextrose agar (SDA) and changed yellow color into pink as positive result. PCR of internal transcript spacer (ITS 1 and ITS 4) origin revealed this gen in all isolated Candida species as well as genetic analysis of the gene appeared germ tube Candid species was reported Candida albicans. Antifungal sensitivity test showed that isolated species produced different values of effects against used antifungals and remarkable values of antifungal resistance.

Keywords: Candida Candiduria, Diabetic patients, PCR, Antifungal resistance

■ Paper 20:

Antibacterial Activity of Chitosan-Coated Mesoporous Silica Nanoparticles Loaded with Clindamycin and Azithromycin Against Staphylococcus aureus and Escherichia coli

Pegah Khosraviyan¹, Dhiya Altememy², Mansoor Khaledi³, Fatemeh Sameini⁴, Dariush Masoudi³, Arezoo Yalameha³, Atiyeh Kaveh¹, Milad Shahini

Shams Abadi 3*

Medical Plants Research Center, Basic Health Sciences Institute, Shahrekord University of Medical Sciences, Shahrekord, Iran.

Department of Pharmaceutics, College of Pharmacy, Al-Zahraa University for Women, Karbala, Iraq.

Cellular and Molecular Research Center, Basic Health Sciences Institute, Shahrekord University of Medical Sciences, Shahrekord, Iran.

Department of Microbiology, Faculty of Medicine, Shahed University, Tehran, Iran.

Student Research Committee, Shahrekord University of Medical Sciences, Shahrekord, Iran.

Abstract:

Background: Growing cases of the nosocomial disease with antibiotic-resistant *Staphylococcus aureus* (*S. aureus*) and *Escherichia coli* (*E. coli*) deliver a major societal-health concern needing alternative treatment measures. Chitosan-coated mesoporous silica nanoparticles (MSNs) are a promising targeting to release antibiotics system, due to the large surface area, control of pore structures, and pH responsiveness.

Methods: Metals in the form of azithromycin and clindamycin loaded chitosan-coated MSNs were prepared through a modified Stober technique. These were characterized by FE-SEM, N₂ adsorption-desorption, DLS and XRD, FTIR involving morphology, surface area, pore size, particle size, and zeta potential as well as chemical structure. The efficiency of loading and the profiles of releasing drug were measured in phosphate buffers with pH of 5 and 7.4. Microbroth dilution and well diffusion were used to test antibacterial activity against *S. aureus* and *E. coli* and were statistically tested using one way ANOVA and Tukey test.

Results: These MSNs had the spherical shapes (50-100 nm), large surface areas and evenly distributed pore sizes. The drug loading was about 100 % with a capacity of around 20 % each of the two antibiotics. MSNs loaded azithromycin showed an increased antibacterial activity, as the minimum inhibitory concentration was 0.125 µg/mL against *S. aureus* and *E. coli* as compared to azithromycin free which was 0.625 µg/mL. There was no significant activity shown by Clindamycin-loaded MSNs. Well diffusion analyses indicated that

negligible reduction of inhibition zone of MSN-carried azithromycin (8 mm, *S. aureus*; 13 mm, *E. coli*) evidently existed compared to that of free azithromycin (17 mm, 12 mm, respectively). The release was much higher at pH 5 which is an indication of the release behavior being pH- responsive.

Conclusion: The functionalization of MSNs with chitosan enhances the bacterial killing of azithromycin against *S. aureus* and *E. coli*, and, thus, a potential treatment modality against antibiotic resistance in Gram-positive and Gram-negative pathogens, as well as bacterial pathologies in general. The warped effectiveness of clindamycin-loaded MSNs in itself underlines the need to carefully select the antibiotics. These findings need more in vivo studies before it can be used in a clinical set up.

Keywords: Mesoporous silica nanoparticles, chitosan, azithromycin, clindamycin, *Staphylococcus aureus*, *Escherichia coli*

■ Paper 21:

Effect of Mixed-Bis-Azo Dye Complex Derived from O-Tolidine on Antifungal, Antibacterial, anticancer Activity and Molecular Docking

Adrees Ahmed Al-Araji 1* , Khalid Jawad Al-adilee 1

1 Department of Chemistry, College of Science, University of Al-Qadisiyah, Diwaniya, Iraq

Abstract:

Compounds were synthesized utilizing the innovative ligand bis azo dye N,N'-bis-(4-benzylphenol)-o-tolidine (BPT) in conjunction with 8-hydroxyquinoline to create a novel Pd(II) mixed-ligand complex. Analytical techniques employed include elemental analysis (C.H.N), crystal structure determination (XRD), magnetic susceptibility, molar conductance, and spectral methods. The spectral analysis of the complex reveals that the ligand (BPT) coordinates in a neutral bidentate fashion, utilizing the nitrogen atoms of the azo group and the oxygen atoms of the hydroxyl group to interact with (8HQ) and the metal ion, thereby forming the coordination complex. The novel ligand bis azo dye and Pd(II) mixed-ligand complex have been recognized for

their antioxidative and anticancer properties. The antibacterial effectiveness of the Pd(II) mixed ligand complex was assessed against two (gram-positive and gram-negative) bacteria and one fungus. The complex demonstrated significant antioxidative and anticancer efficacy against the proliferation of human lung cancer cells. We employed molecular docking to ascertain the binding affinity of these drugs with lung cancer, thereby gaining insights into molecular interactions. Phosphatidylinositol-3-kinase α (PI3K α) is represented by PDB IDs: 4JPS and 6PWA, and the compounds exhibited the highest docking score, which corroborates our experimental results and suggests beneficial interactions with protein substrates. Our ADME predictions further supported the compounds' viability as lead treatment candidates.

Keywords: Spectral studies, Azo dye, Antibacterial Activity, Thermal analysis, Molecular docking.

■ Paper 22:

The role of probiotics in promoting systemic immune tolerance in systemic lupus erythematosus

Asma'a H. Mohamed^{1*}, Alaa Shafie², Rithab Ibrahim Al-Samawi³, Mohammad Chand Jamali⁴, Amal Adnan Ashour⁵, Mohammed Fareed Felemban⁵, Ali Alqarni⁵, Irshad Ahmad⁶, Nasrin Mansuri⁷, Fuzail Ahmad⁸ and Adil Abdelrahim Mohammed Yousif⁷

Abstract:

Systemic lupus erythematosus (SLE) is an autoimmune disorder branded via over-activation of the immune system, resulting in atypical roles of natural and adaptive immune cells and the making of numerous autoantibodies against nuclear components. The causes and pathogenesis of this disease are not completely realized. The gut microbiota plays a significant character in human health and disorder, particularly in autoimmune diseases.

Gut microbiome dysbiosis can affect the host immune system as suggested by several recent studies, balance and activity of the gut microbiome, which are influenced by daily diet, might be associated with disease activity in SLE. There are rising signs to support the immunomodulatory abilities of certain



probiotics. Numerous investigational and clinical surveys have demonstrated the useful effects of certain probiotic bacteria, mainly strains of *Lactobacillus* and *Bifidobacterium*, in patients with SLE. Various species of bacteria were found to be positively or negatively associated with SLE gut microbiomes. A better comprehension of the Studying the gut microbiota will provide a good opportunity to identify microbes involved in tolerance in systemic lupus patients. The purpose of this study is to review the existing literature on probiotics that have the ability to restore tolerance and modulate the levels of inflammatory or anti-inflammatory cytokines that play a role in SLE.

Keywords: Systemic lupus erythematosus, Microbiota, Probiotic, Immune dysregulation, Immunoregulatory probiotics, Cytokine

■ Paper 23:

Sunscreens from a Pharmaceutical Chemistry Perspective: Review and Development Roadmap

Shahlaa Zuhair Abdul-Majeed 1*

1 Pharmaceutical Chemistry Department, College of Pharmacy, Mustansiriyah University, Baghdad 10001, Iraq

Emails: shahlaazuhair@uomustansiriyah.edu.iq 1

Abstract:

Ultraviolet radiation is the primary cause of erythema, premature skin aging, and photocarcinogenesis. Sunscreens, which in many regions are classified as over-the-counter medicines, are situated at the interface of medicinal chemistry and pharmaceutical sciences. This review synthesizes recent advances from 2021 to 2025, emphasizing the chemistry and mechanisms of action of organic and inorganic ultraviolet filters, formulation strategies with a focus on mineral systems containing zinc oxide and titanium dioxide, and analytical methods for assessing sun protection factor and ultraviolet A protection. Key issues, including photostability, systemic exposure, safety concerns, and environmental impact, are examined in detail. In addition, the review highlights risks including benzene contamination and the degradation of octocrylene to benzophenone, and compares international regulatory frameworks. By inte-

grating chemical, formulation, safety, and regulatory perspectives, this work provides a comprehensive roadmap to guide the development of next-generation sunscreens.

■ Paper 24:

The Combination Effect of Chemotherapy Drug with Febuxostat and Curcumin on Colon Cancer Cell line (LS174T).

Ali M. Jaafar Abdulsahib^{1,2}, Rana Ayad Ghaleb³, Nisreen Jalal Mohammed²

¹Department of Pharmacology, College of Pharmacy, University of Alameed, Karbala, Iraq, ²Department Pharmacology, College of Medicine, University of Babylon,

Hillah, Iraq, ³Department of Anatomy and Histology, College of Medicine, University of Babylon, Hillah, Iraq

Abstract:

Background: Colorectal cancers are the 3rd highest commonly discovered form of cancer worldwide. The outcomes of various studies have revealed that cancer cells growth has been affected in response to treatment. In this study, the *in vitro* cytotoxic effects of different drug combinations [5-fluorouracil (5-FU), curcumin, and febuxostat] were measured by crystal violet method. The results showed significant anticancer activity on LS174T colorectal cancer cell line at different combinations.

Objective: This study aimed to assess the cytotoxic effect of different combinations of 5-FU, curcumin, and febuxostat on colorectal cancer LS174 cell line.

Materials and Methods: For 24 h, the human colon cancer cell line LS174T was given a variety of doses of combinations of 5-FU, febuxostat, and curcumin. Crystal violet assay was used to assess the cytotoxicity of the combined agents extract against colon cancer cells.

Results: 5-FU, curcumin, and febuxostat when used in different combinations concentrations, showed respectable anticancer effect on colorectal cancer LS174T cell line.

Conclusion: The current study indicated that the good anticancer effects of combined agents when used to treat colorectal cancer.

Keywords: 5-fluorouracil, curcumin, cytotoxicity, febuxostat, IC50, LS174T cell line

■ Paper 25:

The impact of trace elements and cytokines on the pathogenesis and severity of acne

S. A. Al-Isawi*, Z. H. Al-Zubaidy**, G. L. Ismaeel***, O. A. Mohsein****, *****

*Babylon Technical University, Hilla, Iraq

**University of Babylon, Hilla, Iraq

***University of Al-Ameed, Karbala, Iraq

****Mazaya University College, Thi-Qar, Iraq

*****Al Habbobi Teaching Hospital, Thi-Qar, Iraq

Al-Isawi, S. A., Al-Zubaidy, Z. H., Ismaeel, G. L., & Mohsein, O. A. (2025). The impact of trace elements and

cytokines on the pathogenesis and severity of acne. *Regulatory Mechanisms in Biosystems*, 16(2), e25080.

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Acne is a multifactorial skin condition influenced by hormonal changes, microbial activity, and immune responses. Recent studies highlight the roles of trace elements, such as zinc and copper, and pro-inflammatory cytokines. In this article we investigate the relationship between serum trace element levels and cytokine profiles with the pathogenesis and severity of acne. This case-control study was conducted from March 1 to December 1, 2024, at Nasiriyah General Hospital. It included 100 acne patients and 50 healthy controls, matched by gender and age (19–25 years). Blood samples (5 mL) were collected, centrifuged, and stored at –80 °C. Inclusion criteria included acne patients aged 18–25 years and healthy controls, while exclusion criteria ex-

cluded individuals with chronic diseases or recent use of immunosuppressors. Serum trace elements and cytokine levels were measured using atomic absorption spectrophotometer and ELISA kits. The study found no significant difference in gender or age between acne patients and healthy controls. Acne severity was categorized as mild (35%), moderate (45%), and severe (20%). Significant differences were observed in trace element levels: zinc was lower in acne patients ($50.3 \pm 12.4 \mu\text{g/dL}$) compared to controls ($75.6 \pm 14.3 \mu\text{g/dL}$), while copper was higher in patients (120.4 ± 22.8 vs. $98.7 \pm 19.5 \mu\text{g/dL}$). Magnesium levels were also lower in acne patients (1.8 ± 0.4 vs. $2.0 \pm 0.3 \text{ mg/dL}$). Inflammatory cytokines (TNF- α , IL-1 β , IL-6, IL-8) were significantly higher in patients. Correlations showed zinc, copper, and magnesium levels were associated with acne severity, while cytokine levels strongly correlated with severity. This study demonstrates the significant role of trace elements and inflammatory cytokines in acne severity. Lower zinc and magnesium levels, along with higher copper, TNF- α , IL-1 β , IL-6, and IL-8 levels in acne patients, highlight an imbalance that contributes to acne severity. The correlations between these factors suggest that targeting trace element levels and cytokine activity could offer potential therapeutic strategies for managing acne.

Keywords: acne; trace elements; cytokines; inflammation; zinc; magnesium.

■ Paper 26:

Cardiovascular Diseases in Iraq: The Impact of Hypertension on Heart and Vascular Health

Mohammed Ahmed Mustafa¹, Omar Fadaam², Kadhim Abdulameer Mohsin^{3,*}, Uday Abdul-Reda Hussein⁴,

Usama Kadem Radi⁵, Younus Saddam⁶, Ali Mohammed Hadi⁷ and Heba A. Abd-Alsalam Alsalam^{8,*}

¹Department of Biology, College of Education, University of Samarra, Samarra, Iraq

²College of Pharmacy, Al-Turath University, Baghdad, Iraq

3Al-Bayan University, Iraq

4College of Pharmacy, University of Al-Ameed, Iraq

5College of Pharmacy, National University of Science and Technology, Dhi Qar, Iraq

6Department of Sciences, Al-Manara College for Medical Sciences, (Maysan) Iraq

7Mazaya University college, Nasiriyah, Iraq

8Department of Biology, Collage of Education for Pure Science, University of Kerbala, Kerbala, Iraq

E-mail: hiba.alwaan@uokerbala.edu.iq.

Abstract:

Hypertension is a major contributor to cardiovascular diseases (CVDs) and remains one of the leading causes of morbidity and mortality in Iraq. The burden of hypertension-related cardiovascular conditions, such as coronary artery disease, heart failure, and stroke, has been exacerbated by lifestyle changes, urbanization, and limited healthcare resources. This review examines the prevalence and impact of hypertension on cardiovascular health in Iraq, highlighting key challenges in diagnosis, management, and prevention. It also discusses current trends in public health initiatives, barriers to effective care, and potential strategies to mitigate the growing burden of hypertension-related CVDs in Iraq.

Keywords: Cardiovascular diseases, Hypertension, Iraq, Coronary artery disease, Public health, Stroke

■ Paper 27:

Utilization and Decision-Making Accuracy on Antithrombotic Prophylaxis by Caprini and Padua Risk-Assessment Models for Predicting Venous Thromboembolism in Hospitalized Patients

Ali Hamid Abdulhussein¹, Furqan M. Abdulelah², Dhulfiqar Nidhal Alhila-li³, Ahmed Zakaria Al Arajy⁴, Safa Fakher

Al-Baidhani⁵, Laith G. Shareef^{6*} and Adil Salim Owaid⁷

1Department of Clinical Pharmacy, University of Al-Ameed, College of Pharmacy, Karbala, Iraq

2Department of Clinical pharmacy, College of Pharmacy, Al-Naji University, Baghdad, Iraq

3Department of Clinical pharmacy, College of Pharmacy, Baghdad University, Baghdad, Iraq

4-5Department of Pharmacy, Al-Farabi University College, Baghdad, Iraq

6-7Department of Pharmacy, Al-Rasheed University College, Baghdad, Iraq

Abstract:

Background: Risk-Assessment Models may not accurately predict Venous Thromboembolism (VTE). This study prospectively assessed the use and decision-making accuracy of the Caprini and Padua risk-assessment models for antithrombotic prophylaxis in predicting VTE.

Methods: Prospective study was conducted on 1075 Baghdad Teaching Hospital patients from December 1, 2022, until January 1, 2024. All patients and the subgroup examined for RAM discrimination using baseline medical and demographic data. Assessing Caprini and Padua scores' sensitivity and specificity. We analyze each score using the ROC curve and AUC.

Results: The study observed 37 VTE cases. Individuals with VTE events had a significantly higher mean age (\pm SD) of 60.62 (15.8), $p = 0.001$. VTE occurs in 54% of acutely infected and/or rheumatologic patients $P 0.002$. Survival time and event-free period mean was 83.099 days (95% CI: 81.877-84.322) for patients without thromboprophylaxis and 74.085 days for those utilizing it. The Caprini RAM predicted VTE with 0.652 AUC, lower than Padua's 0.724. The Caprini RAM had 54.1% sensitivity and 61.7% specificity, whereas the Padua prediction score had 97.3% and 36.0%.

Conclusion: The Caprini scores and Padua Prediction Score may improve hospital patients' thromboembolic risk classification compared to current practice.

Keywords: Caprini scores, Padua Prediction Score, Risk-Assessment Models, Thromboembolism

■ Paper 28:

Synergistic Antimicrobial Activity of Organic Acids and Copper Oxide Nanoparticles Against *Staphylococcus aureus* and *Escherichia coli*

Taha. H. Al-Yasiri 1 | Afaf. A. Tarmooz 2 | Muthana H Al-Saidi3

1 Ph.D. (Iraq), Assistant Professor of veterinary public health; Affiliation: General Sciences Department, College of Basic Education, University of Misan, Misan Province, Iraq; Email: taha_hassan@uomisan.edu.iq; Mobile: +96407709335882; ORCID: <https://orcid.org/0000-0002-6111-6803>; Corresponding Author

2 MSc., (Iraq), Lecturer of pharmacology; Affiliation: pharmacology Department, College of medicine, University of Misan, Misan Province, Iraq; Email: dr-afaf@uomisan.edu.iq; Mobile: +9647738526281; ORCID: <https://orcid.org/0000-0002-7743-9113>; Corresponding Author

3 Ph.D. (Iraq), Lecturer of Nanotechnology; Affiliation: Nanotechnology and advanced material research unit, Faculty of Engineering, University of Kufa, Najaf, Iraq; Email: muthanah.alali@uokufa.edu.iq; Mobile: +96409652958; ORCID: <https://orcid.org/0000-0003-4738-5000>; Corresponding Author

taha_hassan@uomisan.edu.iq, dr-afaf@uomisan.edu.iq, muthanah.alali@uokufa.edu.iq

Corresponding Author:

Taha. Hasan. Al-Yasiri

Email: taha_hassan@uomisan.edu.iq

Abstract:

Background: The emergence of multidrug-resistant bacteria necessitates the development of novel antimicrobial strategies. Combining metallic nanoparticles with organic acids presents a promising approach to enhance efficacy and reduce required doses.

Objective: This study aimed to investigate the synergistic antibacterial effect of copper oxide nanoparticles (CuO NPs) in combination with four organic acids (propionic, formic, citric, and acetic) against clinically isolated *Staphylococcus aureus* and *Escherichia coli*.

Methods: The antibacterial activity was evaluated using the standard disk diffusion assay according to CLSI guidelines. CuO NPs were biosynthesized, and their physicochemical properties were characterized using XRD, TEM, and Zeta potential analysis. The interactions between nanoparticles and organic acids were tested at various concentrations.

Results: The combination of CuO NPs and organic acids demonstrated a significant synergistic effect ($p \leq 0.05$) compared to their individual applications. The most potent synergy was observed with citric acid, producing inhibition zones of 31.64 ± 0.26 mm against *S. aureus* and 28.4 ± 0.21 mm against *E. coli* at a concentration of 0.250 mg/mL. This effect was significantly superior to the standard antibiotic ciprofloxacin. The prepared material was characterized using X-ray diffraction and transmission electron microscopy. The results exhibited crystallinity, crystal lengths ranging from 29 to 45 nm, and homogeneous nanoparticle sizes, with a mean surface potential of +42 mV, depicting good sample stability.

Conclusion: These outcomes demonstrate that organic acids, particularly citric acid, in conjunction with copper oxide nanoparticles form an efficient method to suppress bacteria that are resistant to many drugs. By lowering the dosages needed of both medicines, this multi-mechanism approach lowers the risk of toxicity and the possibility of resistance developing, which is crucial in the present antibiotic resistance epidemic.

Keywords: Synergistic effect, Copper oxide nanoparticles, Organic acids, Antibacterial activity, *Staphylococcus aureus*, *Escherichia coli*

■ Paper 29:

Study the Thrombolytic Effect of Aqueous and Ethanolic Extracts of Some Plants in Vitro

Hiba G.Hussain¹, Attaa S.Dawood², Ali Alaa Alaraji³, Firas Ghafil Abbas⁴, Katia H.Shahda⁵, Rabab Khalil⁶, Zainab Hussein Ajeel⁷, Ahmed Hasan Al-hachami⁸

¹College of Pharmacy, Al Zahraa University for women, Kerbala, Iraq, ORCID ID <https://orcid.org/0000-0003-4211-8712>, E-mail: hiba.ghanem.hus-

sain@alzahraa.edu.iq

2College of Pharmacy, Al-Zahrawi University, Kerbala, Iraq, ORCID ID<https://orcid.org/0009-0000-9054-7066>, attaa.sattar@alzahu.edu.iq

3Community Health Nursing, College of Nursing, University of Al-Ameed, Karbala, Iraq, Email: al.hashmi@alameed.edu.iq

4 College of Pharmacy, Al-Zahrawi University, Kerbala, Iraq, firasghafil@g.alzahu.edu.iq

5 Al Hawash privet University, ORCID ID: <https://orcid.org/0000-0001-5092-8542>

6 College of Nursing, Al-Zahrawi University, Karbala, Iraq, Iraq, ORCID ID<https://orcid.org/0009-0002-1468-3044>, Email: rabab@alzahu.edu.iq

7 College of pharmacy -university of Kut, Email: Zainabhusain8420@gmail.com

8College of nursing, University of Kut, Email: Alhachami.1988@gmail.com

Abstract:

Background and objectives: Since ancient times, medicinal plants have been a major source of treatment in folk medicine across cultures and remain an important source for the discovery of new drugs. This study aimed to evaluate the thrombolytic activity of aqueous and ethanolic extracts of three commonly used medicinal plants: *Zingiber officinale*, *Piper nigrum*, and *Cinnamomum cassia*.

Methods: The extracts were prepared using both distilled water and ethanol, and their thrombolytic activity was studied in vitro. Streptokinase (SK) was the positive control, while distilled water was the negative control.

Results and Conclusion: The results revealed a concentration-dependent thrombolytic activity for all aqueous extracts, with the aqueous extract showing the highest activity (44.3%), followed by *Piper nigrum* (41.82%) and *Cinnamomum cassia* (18.0%) at 50 mg/ml. The ethanolic *Zingiber officinale* extract showed less thrombolytic activity, likely due to its limited solubility in the study medium. Streptokinase remained the most effective agent, achieving a 68.24% clot dissolution rate. These results suggest that aqueous *Zingiber officinale* extract may have a promising thrombolytic effect, warranting further research into its bioactive compounds, pharmacodynamics, and pharmacoki-

netics.

Keywords: Thrombolytic effect, Zingiber officinale, Piper nigrum, Cinnamomum cassia, Streptokinase.

■ Paper 30:

Synthesis and Characterization of a New Ligand Derived from 2-Aminobenzoxazole and 2-Aminonicotinaldehyde and Its Metal Complexes with Anticancer Activity

Marwan Hadi Hussein¹, Dr. Haider Obaid Jamel², Dr. Sundus Kareem Hamzah³

¹Ministry of Education, The General Directorate of Educational in Qadisiyah, Qadisiyah, Iraq.

Abstract:

Azomethine-ligand is an intriguing novel ligand that has been created. Ligand stands for -3-((E)-(benzo[d]oxazol-2-ylimino)methyl)pyridin-2-yl)imino)butan-2-one oxime-1-amine. Its synthesis process started with the combination of 2-aminobenzoxazole and 2-amino nicotinic aldehyde in pure ethanol, which produced an intermediate molecule that we will call compound B. After that, molecule B and Diacetyl Monoxime reacted to produce the last ligand. The fascinating process of creating a complex with Au (III) occurred next. This was achieved by reacting our newly synthesized ligand, HL1, with gold chloride. We used a variety of spectroscopic techniques, including FT-IR, UV-Visible, and ¹H-NMR, in addition to molar conductivity measurements, atomic absorption, elemental analysis, and FE-SEM, to decipher the structural complexities of this ligand and its metal complexes. To capture the whole picture, we even measured melting points and magnetic susceptibility. The non-ionic character of the gold(III) complexes, which showed a 1:1 stoichiometry, was notable in the molar conductivity evaluations. Examining the FT-IR spectra, we observed that the nitrogen atoms from the Schiff base's azomethine moieties and the azomethine groups nested inside the benzoxazole rings successfully co-

ordinated with the metal ion—a dance of molecular architecture! The geometric configurations of the complexes were revealed by analyzing their activity under visual, magnetic, and ultraviolet light. Notably, the gold (III) complex displayed square or tetrahedral planar shapes. Future research into their possible antioxidant and anticancer qualities is made possible by such structural discoveries. Interestingly, BOYM-PIBO's ligand and its.

Keywords: 2-Aminobenzoxazol , DFT , Antioxdant , Breast anticancer , Gold (III) complex

■ Paper 31:

Knowledge and Attitudes of Iraqi Women About The Use of Vitamins Supplements

Iman Hussein Naser¹, Sarah Najm Abed¹, Marwah Ali Zghair²

¹ Department of Pharmacology and Toxicology ,College of Pharmacy, University of Kerbala, Iraq

² Department of pharmaceutics,College of Pharmacy, University of Kerbala, Iraq

The corresponding author Marwah Ali Zghair marwah.a@uokerbala.edu.iq

Abstract:

Background: Vitamins are essential nutrients requisite for the body's biologic functions in small amounts and playing a vital role in metabolism , immunity, and overall health maintenance. Fat,soluble vitamins (A, D, E, and K) and water,soluble vitamins (B-complex and C) are vitamins two main subgroups . Nowadays ,and with the increasing popularity of dietary supplements and vitamins, awareness of proper dosage, indications, and possible side effects has become increasingly critical because not only can deficiency but also the excessive intake lead to health problems and complications.

Aim of the Study: This research goal is knowledge and attitudes assessment of Iraqi women regarding the vitamin supplements consuming.

Materials and Method: cross-sectional survey has been done using a

self-designed questionnaires among 250 Iraqi women from different demographic backgrounds. The questionnaire was structured to evaluate participants' knowledge and attitudes toward vitamin supplement use. Data were analyzed statistically using SPSS software, and weighted means and standard deviations have been calculated for results interpretation .

Results: The findings indicated noticeable gaps in awareness. Among participants, 48.0% of single women and 52.0% of married women demonstrated a “Degree” level of knowledge. University students exhibited the highest awareness (56.0%), compared to those with secondary (21.6%), primary (12.0%), or no formal education (10.4%). Urban participants showed greater knowledge (56.8%) than those from rural areas (43.2%). Younger women aged 15–30 years (54.0%) had higher awareness than those aged 31–45 years (25.6%), 46–60 years (16.0%), and 61–75 years (4.4%). Housewives (41.2%) demonstrated slightly higher knowledge levels compared with employees (36.4%) and students (22.4%).

Conclusion: The study concludes that Iraqi women generally demonstrate moderate to high awareness of vitamin supplements, with educational background emerging as a key influencing factor. However, variations exist across age, location, and occupational status. Promoting accurate information and responsible supplement use is essential to prevent misuse and ensure better health outcomes.

Keywords: attitude, Iraq, knowledge, vitamins, women .

■ Paper 32:

Impact of ABCB1 Genetic Polymorphisms on Therapeutic Response and Safety of Atorvastatin in Iraqi Dyslipidemia Patients

Sarah Alaa Fadhil¹, Noor D. Aziz², Shaima Jabbar^{34*}, Riyadh Mustafa Mur-tadha Al-Shehristani⁵

1 The graduate program of the pharmacology and toxicology department/ Pharmacy College, Kerbala University, Karbala, Iraq.

2 Department of Clinical Pharmacy, Pharmacy College, Kerbala University, Karbala, Iraq.



3 Pharmacology and Toxicology Department/Pharmacy College, Kerbala University, Karbala, Iraq.

4 Al-Subtain University the International Branch of Tehran University, Karbala, Iraq.

5 College of Medicine, Al-Ameed University, Karbala, Iraq.

*Corresponding Author:

Shaima Jabbar: shaymaa.a@uokerbala.edu.iq.

Abstract:

Objective: The aim of this study is investigating ABCB1 genetic polymorphism (rs1045642) and (rs2032582) in Iraqi patient with Dyslipidemia receiving daily oral doses of 40 mg of atorvastatin and to determine the effect of genetic polymorphism of ABCB1 on atorvastatin efficacy and safety.

Methods: The cross-sectional observational study involved 150 male and female patients diagnosed with dyslipidemia and who were received atorvastatin 40mg per day as monotherapy. demographic information, such as age and body mass index, as well as duration of therapy are collected from each patient. Lipids profiles were evaluated.

Result: The distribution of genotypes revealed high frequencies of TT (60%) for rs1045642 and GG (50%) for rs2032582, both in Hardy–Weinberg equilibrium ($p = 0.0001$). For rs1045642, carriers of the T allele showed a more favorable lipid response: males exhibited significantly lower total cholesterol ($p = 0.0225$) and LDL-C ($p = 0.0177$), while females showed higher HDL-C ($p = 0.0199$) and lower triglycerides ($p = 0.0348$). The same variant was also linked to lower ALT and AST levels, indicating a possible hepatoprotective effect. In contrast, for rs2032582, mutant carriers (T/A) — particularly males — demonstrated higher TC, TG, and LDL-C levels ($p < 0.05$), suggesting reduced atorvastatin efficacy. Two-way ANOVA confirmed significant effects of gender and genotype, and an interaction between them for HDL-C and LDL-C responses.

Conclusion: The findings indicate that ABCB1 polymorphisms modulate the lipid-lowering efficacy and hepatic safety of atorvastatin in a gender-dependent manner. The rs1045642 T allele appears to enhance treatment response and reduce hepatotoxicity, whereas the rs2032582 T/A variant may predict a poorer lipid response. Incorporating ABCB1 genotyping into clinical assess-

ment could support personalized statin therapy in dyslipidemia management among Iraqi patients.

Keywords: Atorvastatin; Dyslipidemia; ABCB1; rs1045642; rs2032582; Pharmacogenetics; Lipid profile; Hepatotoxicity.

■ Paper 33:

Anticancer Activity of Silver Nanoparticles Biosynthesized Using *Urtica pilulifera* L. Extract Against U87 Glioblastoma Cancer Cells

Muthik A. Guda¹, and Elaf Ayyad Jabbar Alshebly

¹Department of Ecology, Faculty of Sciences, Kufa University, Iraq.

Corresponding Author email: meethakha.almithhachi@uokufa.edu.iq

Abstract:

The biomedical field now uses green nanomaterial synthesis methods because these methods produce environmentally friendly results at affordable costs (AgONPs) for cancer cell testing against human glioblastoma U87 cells. The formation of U-AgONPs was confirmed by UV-Vis spectroscopy and XRD and FTIR and FE-SEM which showed that the nanoparticles were spherical crystalline structures with phytochemicals from the extract as surface caps. The phytochemical analysis of *U. pilulifera* revealed multiple bioactive compounds including flavonoids and terpenoids and alkaloids and phenols and tannins which showed strong antioxidant properties to help create and stabilize the nanoparticles. The cytotoxicity test showed that U87 cell viability decreased with increasing concentration until 2.15 mM reached the maximum cytotoxic effect which resulted in 88% cell survival. The microscopic analysis showed that cells underwent apoptosis through their shrinking and their membrane became damaged. The results show that AgONPs synthesized from *U. pilulifera* extract demonstrate strong anticancer properties which makes them suitable candidates for glioblastoma treatment as environmentally friendly therapeutic agents.

Keywords: Nettle, *U. pilulifera* L., Anticancer activity, Apoptosis, Cell viability, Natural phytochemicals, Selective cytotoxicity, Cancer therapy

■ Paper 34:

An Investigation of Photoprotection Practices and Prevalent Misconceptions among Medical Students: A Clinical Biochemistry Perspective

Ahmed Faisal Obed 1, Asmaa Hamza radeef 2 , Zena Hasan Sahib 3*, Shaima H. Radeef 4*.

1 Dept. of Clinical Biochemistry, Hammurabi College of medicine, University of Babylon, Iraq. Phone 07801639259. email:Ahmed faisal obaid@gmail.com

2 Dept. of Clinical Biochemistry, Hammurabi College of medicine, University of Babylon, Iraq. Phone 07800428954. email:asmaa.psb@gmail.com

3 Dept. of Pharmacology, Hammurabi College of medicine, University of Babylon, Iraq. Phone 07808024524 email: zina.hasan@uobabylon.edu.iq.

4 (University of Babylon, College of Fine Arts, Department of Fine Arts). Fine.shaymaa.hamzah@uobabylon.edu.iq

Abstract:

Background: Sunscreen is a critical component of effective photoprotection, yet adherence to proper usage guidelines remains inadequate among diverse populations. Existing research highlights significant gaps in public understanding, including incorrect application techniques, failure to reapply sunscreen, and insufficient integration of complementary protective measures like seeking shade or wearing protective clothing.

Aim of the study: This study aims to examine sun protection behaviors in university students, focusing on sunscreen usage patterns, prevalent knowledge gaps, and persistent misconceptions about UV exposure.

Methods: This study included 34 female medical students from Hammurabi College of Medicine, University of Babylon (Iraq), aged 19–25 years (mean

= 21.2), spanning academic stages 2 to 6. Data were collected via a pre-designed Google Forms questionnaire, assessing demographics, sunscreen usage habits, knowledge, and attitudes.

Results: Findings reveal both positive trends—such as higher sunscreen use among individuals with oily skin—and concerning behaviors, including neglect of reapplication and overreliance on sunscreen as the sole protective measure.

Conclusion: This study underscores critical gaps in sun protection knowledge, particularly regarding sunscreen reapplication, dosage, and UV myths. Targeted educational interventions emphasizing proper usage, debunking misconceptions, and promoting multimodal protection are essential to improving sun safety behaviors and reducing skin cancer risks.

Keywords: Sunblock, knowledge, attitude, misconceptions, reactive oxygen species.

■ Paper 35:

Evaluation of elements impurities in drugs according to pharmacopoeia by use FESEM-EDS technique.

1st Rafid A. Doulab¹; 2nd Ghassan S. Ahmed²; 3rd Falah H. Shry³.

¹ Electron Microscope Unit, College of Pharmacy, University of Basra, Iraq
Rafid.doulab@uobasrah.edu.iq

² Clinical Pharmacy Dept. College of Pharmacy, University of Basra, Iraq
ghassan.ahmed@uobasrah.edu.iq

³ Clinical laboratory sciences dept. College of Pharmacy, University of Basra, Iraq
falah.shary@uobasrah.edu.iq

Abstract:

Introduction: Elemental Impurities in the pharmaceutical industry is indispensable to ensure the safety of pharmaceuticals, for 24 elements. Although atomic absorption and inductively coupled plasma are used in the U.S Pharmacopoeia and the European Pharmacopoeia, FESEM with energy dispersive spectrometers can be applied as an alternative analysis method for quantita-



tive and qualitative results for a variety of elements without chemical pretreatment, unlike other techniques. This technique is characterized by the shortest time, with less contamination, no reagent consumption, and the generation of minimal residue or waste, as well as sample preparation time limiting, with minimal analysis error.

Materials and method: Simple dilution for powder or direct analysis for liquid, we analyzed the Lead chloride solution and selenium solution with known concentrated (test sample) by dissolve 0.035 g of lead and dissolve 0.025g of selenium in 25°C deionized distal water usefulness of energy dispersive spectrophotometry (EDS) method in testing with field emission scanning electron microscopy (FESEM, SUPRA 55 Carl Zeiss Germany) with an X-ray energy dispersion (XFlash6110 Bruker Germany). The samples were analyzed directly without coating by applying 5 μ of a known concentrated diluted sample on a carbon stub with accelerated voltage according to sample thickness.

Results: for this spot was in atomic percentage C atom. [at%] for Lead and Selenium were 0.1 and 1.7, respectively. By Avogadro's conversion factor and the elements' mass number, the final results were 3.44 μ g for Lead and 37.91 μ g for Selenium, which makes this data fully match the Pre-prepared concentrations for the purpose of examination.

Discussions: More accurate quantitative analysis for the sample depends on the thickness, which should be less than 0.1 μ . On this paper we prepare standard specimen to be suitable for SEM-EDS technique stability and accuracy by use standard specimen for the calibration and standardization of SEM-EDS, one of the EDS standardization technique for the qualitative analysis of elemental composition is the beam diameter range from 0.1 to 1 mm, while for quantitative analysis, 5 mm diameters will show satisfy results as well as the depth for electron penetration and working distance (WD) which must be set to about 10 mm. Chemical composition of the analyzed sample by SEM-EDS of the tablet surface is similar to the content of the bulk powders for the same tablet.

Conclusion and recommendation: This study is an application of FE-SEM-EDS in the US pharmacopeia and ICH /Q3D guideline, with better results than other techniques, because it does not require complex methods or chemicals for digestion, which interfere with the final results, with the possibility of keeping the sample at any time for re-analysis. The recommendation is to use this technique in pharmacopeia as standard methods, like inductively coupled plasma, both ICP-AES, ICP-OES, and ICP-MS.

■ Paper 36:

Therapeutic Impact of Melatonin Combined with Etanercept on Chronic Plaque Psoriasis in Iraqi Patients

Ghadah Ali Al-Oudah¹ , Ihab I.Alkhalifa² , Shaimaa M. Mohammed³ , Ali Ameer Al-Ameedee⁴ Noor Thamer Mahmood⁵

1.PhD in Clinical pharmacology, College of Pharmacy, Al-Mustaqbal University, Babylon, Hillah, 51001,; Email ;ghada.ali@uomus.edu.iq , <https://orcid.org/0000-0003-0266-9114p>

2.PhD pharmacology & toxicology, Baghdad ,Al-Rasheed University College of pharmacy department,Iraq , Email: dr_ihab75@yahoo.com

3.PhD in clinical biochemistry ,college of pharmacy ,Al-Mustaqbal University, Hillah, Iraq, Email shaimaamunther@uomus.edu.iq

4.MBChB Resident Doctor at Babil Health Directorate, Iraqi Ministry of Health, Iraq

Email; ai.alameedee96@gmail.com

5.Computer Center, University of Babylon.nour.thamer95@uobylon.edu.iq

Corresponding author: ghada.ali@uomus.edu.iq

Background: Psoriasis (Ps) is a chronic, autoimmune, inflammatory multisystemic disease. The pathophysiology of chronic inflammatory diseases is significantly influenced by oxidative stress including psoriasis due to imbalance between free radicals and antioxidants in our body. Treatment with some antioxidant's supplements may improve patients' therapeutic response medication can be an appropriate therapeutic option. Melatonin, a naturally occurring compound, possesses potent antioxidant and anti-inflammatory properties. Its ability to neutralize harmful free radicals makes it a promising therapeutic agent for various chronic diseases, including those associated with oxidative stress. Beyond its direct antioxidant effects, melatonin indirectly protects against oxidative damage by stimulating antioxidant enzymes and modulating immune responses. This multifaceted action highlights melatonin's potential as a valuable asset in mitigating conditions like atopic dermatitis, where oxidative stress and inflammation are key contributors. Recent research has increasingly focused on melatonin's protective role in skin health,

Aim of study: The goal of this medical trial was to assess the efficacy of



using melatonin as adjunctive therapy in combination with etanercept in ameliorating the severity of chronic plaque psoriasis among Iraqi patients over a three-month period

Methods: A prospective, randomized, double-blind clinical trial was conducted over a three-month period to assess the efficacy of melatonin as adjunctive therapy to etanercept in the management of psoriasis. Sixty adult patients (18 female, 42 males; age range 17-60 years) with psoriasis were randomized into two groups. Group A (n=30) received etanercept [50mg, s.c, twice weekly] and placebo, while Group B (n=30) received etanercept [50mg, s.c, twice weekly] plus melatonin 5 mg, orally, once daily]. Psoriasis Area and Severity Index (PASI) scores as a severity measuring index and blood levels of malondialdehyde (MDA) and superoxide dismutase (SOD) were assessed at baseline and at the end of the intervention.

Results: Significant improvements in PASI score and oxidative markers (MDA and SOD) were observed following both biological therapy and adjunctive melatonin treatment (P-value 0.000). For group A, Baseline PASI score (Mean \pm SE) was (21.66 \pm 0.95) MDA was (6.25). After three months, PASI score ,MDA and SOD (Mean \pm SE) were (6.42 \pm 0.25) , (4.27) and (397.9 respectively, representing a 69.14% improvement.

For group B, Baseline PASI score ,MDA and SOD (Mean \pm SE) were (21.50 \pm 1.20) ,(6.70) (203.4) respectively. After three months, PASI score (Mean \pm SE) was (3.56 \pm 0.12) ,MDA was (4.34) and SOD was (564.1 representing an 81.87% improvement

Conclusion: The daily administration of 5 mg melatonin supplements as adjuvant therapy with biological drug to Psoriatic patients for 3months had reduce the severity of disease in a short period time



————— Third Theme —————

**THE IMPACT OF SCIENTIFIC
RESEARCH ON IMPROVING
NURSING CARE**

■ Paper 1:

Assessment of Oral Health Status among Children undergoing Mechanical Ventilation

* Ahmed Abdulkadhim Mohammed, **Assist. Prof. Adraa Hussein Shawq

*PhD. Student, Pediatric Nursing Department, College of Nursing, University of Baghdad, Baghdad, Iraq.

** PhD of Pediatric Nursing, College of Nursing, University of Baghdad, Baghdad, Iraq

*Corresponding Author's: ahmed.abd1204a@conursing.uobaghdad.edu.iq

Abstract:

Objective(s): The present study was conducted to assess the oral health status and associated factors among children undergoing mechanical ventilation who were admitted to the pediatric intensive care unit (PICU) at Children Welfare Teaching Hospital in Baghdad City.

Methods: A descriptive cross-sectional design was conducted on 50 children who were mechanically ventilated in the pediatric intensive care unit (PICU) at Children Welfare Teaching Hospital in Baghdad City, from May 1, 2025, to September 30, 2025. A non-probability purposive sampling technique was utilized to select children who met the inclusion criteria. Two tools used in this study, Tool I: Sociodemographic and Clinical Characteristics and Tool II: Beck Oral Assessment Scale (BOAS). PSS version 26 for descriptive and inferential data analysis, including frequencies, percentages, mean, standard deviation, and Spearman Correlation coefficient.

Results: Children on mechanical ventilation in PICUs demonstrate a notable decline in oral health, showing moderate to severe oral dysfunction (16.36 ± 2.099) as measured by BOAS. Age, duration of hospital stay, and type of endotracheal tube were significantly associated ($p=0.016$, $p=0.009$, and $p=0.023$, respectively) with oral health status.

Recommendations: Utilizing standardized oral care protocols in PICUs, including prior mouth assessment, which should be mandatory for nurses to prevent oral complications, promote comfort, and improve overall well-being among mechanically ventilated children. **Keywords:** Child, Oral dysfunction, Oral Assessment, Mechanical ventilation, Beck Oral Assessment Scale.

■ Paper 2:

Assessment of Butchers' Knowledge, Attitudes and Practices Regarding Hemorrhagic Fever: A Cross-Sectional Study to Inform Disease Prevention Strategies in Iraq

Rawaa Kamel Abd1, Sana Rouis2, Vinoth Raman3

1 Department of Community Health Nursing, Nursing College, University of Thi- Qar, Al-Nasirya, Iraq. rawaa9922@gmail.com

2 Departement of Infections Diseases, Ibn Eli Jazzar University hospital, kai-rouan, Faculty of Medicine of Sousse, University of Sousse, Tunisia. sanarouis@yahoo.fr

3 Deanship of Quality and Academic, Accreditation, Imam Abdulrahman Bin Fisal

University, Dammam. Saudi Arabia. vrrangan@iad.edu.sa

Corresponding author: Rawaa Kamel Abd

Abstract:

Background: Hemorrhagic fevers have become a major public health risk, especially in occupational groups that are at high risk of exposure, like butchers. It is important to understand the knowledge, attitudes, and practices (KAP) of such workers to be able to create effective prevention programs.

Objective: The aim of the study is to evaluate the behaviour, attitudes and knowledge of butchers about hemorrhagic fever and determine factors that relate to KAP scores in Thi-Qar Governorate of Iraq.

Methods: The study was a cross-sectional research carried out at Al-Nasiriyah city between April and June 2025. The number of butchers randomly chosen was 237, and they were located in various parts of the city center. The structured questionnaire that included demographic characteristics, knowledge (20 questions), attitudes (10 questions), and practices (8 questions) was used to gather data. Statistical analysis was performed by of SPSS version 27.

Findings: Most participants 161 (67.9 %) showed poor knowledge about hemorrhagic fever where 123 (51.9%) were negative and 144 (60.8%) exhibited poor practices. Greater associations were identified between knowledge scores and education level ($p=0.045$) and educational courses ($p=0.032$). A significant

correlation was observed between practice scores and the level of education ($p=0.001$), as well as with health educational courses ($p=0.036$). Furthermore, knowledge and practices were found to be significantly positively correlated ($R=0.08$, $p=0.009$).

Conclusion: The research indicates that there is a significant gap of knowledge and poor practices among butchers in terms of prevention of hemorrhagic fever. There is a critical need for tailored educational interventions for this occupational group to mitigate the risk of disease transmission.

Keywords: Hemorrhagic fever, butchers, knowledge, practices, occupational health

■ Paper 3:

Impact of Decisional Balance and self-Efficacy Related to trans theoretical model in Improving Behaviors Related to Electronic Hookah among Healthcare Workers

Ahmed khalid M-Taher¹, Ahmed Barid Kayem², Laith Essa Hassan³

ahmed.khaled@hu.edu.iq¹, ahmed.barid@qu.edu.iq², laith.hassan@hu.edu.iq³

¹ (Department of Clinical Nursing Sciences, College of Nursing, , Al-Hadba University, Iraq)

² (Department of Clinical Nursing Sciences, College of Nursing, Al-Qadisiyah University, Iraq)

³ (Department of Clinical Nursing Sciences, College of Nursing, , Al-Hadba University, Iraq)

Corresponding author: ahmed.khaled@hu.edu.iq

Abstract:

Background: An electronic hookah is a machine that uses electricity to simulate smoking tobacco, the use of electronic nicotine delivery systems is a recent and rapidly increasing global epidemic.

Purpose: To determine the efficacy of Decisional Balance and self-Efficacy intervention in improving behaviors related to electronic hookah among

healthcare workers in Mosul city.

Methods: True experimental design is conducted to determine the efficacy of trans theoretical model on intervention for improving behavior related to electronic hookah smoking at Mosul hospitals among healthcare workers for period from 20th. Septembers. 2022 to 25th. April. 2023 by using a developed questioner. A probability simple random sample of 58 males and females' employees from two hospitals, which are Mosul general hospital and Al shifa hospital are chosen from a homogeneous group of 440 employees, and data has been analysed by using descriptive statistics and linear regression.

Results: The interventional program made participants enhanced their decisional balance and self-Efficacy regarding electronic-hookah smoking cessation.

Conclusion: At the end of the study, Transtheoretical Model based program were found to be effective in smoking cessation. The health care workers showed gradual move through positive change in decisional balance (pros, cons) toward quit of smoking. As they progressed through Self efficacy/temptation scores relating to smoking and habit strength increased.

Keywords: Decisional Balance, self-efficacy, hookah

■ Paper 4:

Evaluating effect of Tripod and Prostrate Positions with Pursed-Lips Breathing on Dyspnea and Pulmonary Function in Adult Asthma Patients: A Nursing Study

MSN. Haider Nawaf Abed-Ali/College of Nursing/University of Babylon, Iraq. Email: haider84nawaf@gmail.com ¹

Prof. Dr. Shatha Saadi Mohammed. /Adult Nursing Department/College of Nursing/ University of Babylon, Iraq ²

Abstract:

This study evaluates an effect of tripod and prostration positions with pursed-lip breathing on dyspnea and pulmonary function in adult asthma patients.

This quasi-experimental study evaluated the effects of tripod and prostrate positions combined with pursed-lip breathing on dyspnea and pulmonary function in 90 adult asthma patients (mean age 54.4 ± 14 years) at an Iraqi medical center. Using a pretest-posttest control group design, patients were divided into control, tripod, and prostrate groups ($n=30$ for each group). Results demonstrated significant improvements in the intervention groups: tripod positioning reduced respiratory rate by 45.4% ($p<.001$, $d=2.23$) and increased SpO_2 by 3.8% ($p<.001$, $d=1.46$), while prostrate positioning showed moderate effects (RR $d=0.67$, SpO_2 $d=0.86$). Dyspnea severity decreased markedly, with tripod positioning doubling mild dyspnea cases (16.7% to 40%) and halving severe cases (43.3% to 20%). All demographic and clinical characteristics showed no significant between-group differences ($p>0.05$), ensuring internal validity. The findings suggest tripod positioning, when combined with pursed-lip breathing, offers superior clinical benefits for acute asthma management compared to prostrate positioning. Nurses should prioritize training patients in these techniques, particularly the tripod position, as an effective non-pharmacological intervention during exacerbations.

Keywords: *Asthma, Prostration position, Tripod position, Pursed-lip breathing*

■ Paper 5:

Association Between Physical Activity and Self-Management Behaviors and Its Effects on Glycemic Control Among Diabetes Mellitus Patients: A Longitudinal Design Study

Kadhim Laydh Abdulhamza¹, *MSc, Directorate of Health of Al-Diwaniyah / Higher Institute of Health, Al-Diwaniyah, Iraq.*

Email: kadhmm.abd2202p@conursing.uobaghdad.edu.iq,

ORCID: <https://orcid.org/0009-0008-0313-5337>

2.Haider Mohammed Majeed², *PhD Nursing, assistant professor, Department of Adult Nursing, College of Nursing, University of Baghdad, Baghdad, Iraq. Email: haidermm@conursing.uobaghdad.edu.iq, ORCID: [0000-0003-3351-0974](https://orcid.org/0000-0003-3351-0974)*

Corresponding Author:

Haider Mohammed Majeed ², *PhD Nursing, assistant professor, Department of Adult Nursing, College of Nursing, University of Baghdad, Baghdad, Iraq. Email: haiderrmm@conursing.uobaghdad.edu.iq, ORCID: 0000-0003-3351-0974.*

Abstract:

Background: Diabetes mellitus (DM) is a chronic metabolic disorder characterized by persistent hyperglycemia resulting from defects in insulin secretion, insulin action, or both. Its global prevalence continues to rise, largely driven by sedentary lifestyles, poor dietary habits, and aging populations.

Objective: to explore the longitudinal relationship between physical activity and self-management behaviors, and their combined impact on glycemic control among patients with diabetes mellitus.

Methodology: A longitudinal study was conducted at Al-Diwaniyah Teaching Hospital, involving 120 diabetic patients selected through simple random sampling. Data were collected at three time points using validated tools to assess physical activity levels (IPAQ), Self-Management Behaviors, and glycemic control (HbA1c). Demographic and clinical variables were also recorded. Statistical analysis was performed using SPSS version 26 to examine associations and changes over time.

Results: The longitudinal study tracked 120 patients diagnosed with diabetes mellitus across three observation periods. Most participants were middle-aged and living with type 2 diabetes. Over time, physical activity levels showed a statistically significant improvement, with a marked shift from low to high activity categories (Table 2, Table 4; $p < 0.001$). In contrast, self-management behaviors declined, as evidenced by decreasing DSMQ scores and a transition from “Perfect” to “Inadequate” self-care levels (Table 3, Table 5). Simultaneously, HbA1c values increased significantly across all time points (Table 6; $p < 0.001$), indicating progressive deterioration in glycemic control despite improvements in physical activity.

Conclusion: This study demonstrates that while physical activity improved over time, declining self-management behaviors were linked to worsening glycemic control. These results emphasize the need for integrated lifestyle interventions to support long-term diabetes management.

Keywords: Diabetes Mellitus, Physical Activity, Self-Management, Glycemic Control, Longitudinal Study.

■ Paper 6:

An Innovative Sawdust-Plaster Mixture: which Type Enhancing comfort and pain Reduction Among Fracture Patients: Randomized Clinical Trial

Authors: Rasool. R. lafta, BSN,¹ *Nursing, Assistant professor* Haider M. Majeed, PhD²

Affiliations:

¹ *Department of Adult Nursing, College of Nursing, University of Baghdad, Baghdad, Iraq*

² *Department of Adult Nursing, College of Nursing, University of Baghdad, Baghdad, Iraq*

E-mail: haidermm@conursing.uobaghdad.edu.iq

Abstract:

Background and objectives: Although casting is still a fundamental part of musculoskeletal care, there have been substantial improvements supported by recent research. Removable braces, shorter immobilization times, and the use of novel materials have all improved patient results and satisfaction. The study aims to evaluate a new sawdust-plaster mixture in a randomized clinical trial to assess its effectiveness in enhancing patient comfort and pain reduction compared to traditional plaster of Paris, aligning with the trend towards more refined fracture management.

Method and Materials: 56 Fracture patients were randomized to one of two groups: the control group (n=29) received a standard cast, while the intervention group (n=27) received a sawdust-plaster cast. To guarantee objective results, the May to September 2025 study used a single-blind, true experimental design. A Visual Analogue Scale (VAS) was used to measure the pain and healing, and the healing time was noted. SPSS version 30 was used for the statistical analysis.

Results: The study analyzed 56 participants, divided into an intervention group and a control group. The intervention group was predominantly male

(85.2%) and had a healthy weight (48.1%), while the control group was predominantly overweight (62.1%). The intervention group experienced significant changes in pain and comfort levels, with the majority reporting mild pain. The study found no significant associations between sex, educational level, residence, comfort, marital status, BMI, or monthly income and any sociodemographic variables.

Conclusions: The study demonstrates that a sawdust-plaster cast mixture is a cost-effective, patient-centered, and sustainable alternative to conventional plaster casts. It reduces pain and improves comfort, aligning with global calls for eco-friendly healthcare. Integrating this innovation into orthopedic practice could strengthen fracture management policies, enhance patient satisfaction, and reduce healthcare system burden.

Keywords: Innovative, Sawdust-Plaster Cast, Pain Reduction, Enhancing Comfort , Fracture patients

■ Paper 7:

Effect of Implementation of Follow-Up Care Model on Number of Rehospitalizations in Patient with Chronic Heart Failure Disease

Authors: Shokoh Varaei¹, Mohammed Khanjary²

Corresponding author:

Mohammed Khanjary, MSc student, Alameed University

Email ac_milan515@yahoo.com

Phone number: 009647904449129

Mailing address: Karbala City Karbala – Najaf Highway Front of Pole (1238)

P.O No:198 Karbala

Co—Authors:

1st Shokoh Varaei, PhD, Tehran university of medical sciences, Tehran , Iran

Email shvaraei@tums.ac.ir

Abstract:

Background: Heart failure is a global health issue that affects approximately 26 million individuals worldwide. The majority of individuals with heart failure live with a significant symptom burden, comorbidities, and impairment; up to 88% of persons with heart failure experience breathlessness at repose.

Aim of study: determination the Effect of patients education on number of re-hospitalizations in Patients with chronic Heart Failure disease.

Methodology: A randomized control trail (RCT) was conducted in Holy Karbala City in Iraq. A purposive sample of heart failure patients in clinic and out clinic. Then based of Block Random Assignment, the patients were divided into two groups, the control group consist of (35) patients and intervention group group consist of (35) patients, the patients in study group exposed to the health education about heart failure self-management . Data were collected by using demographic questionnaire included age, gender, marital status, level of education, duration of heart disease, side of heart failure, Occupation Status, and number of hepatisations during last three month. A descriptive and inferential data statistical technique was used to analyze the data.

Results: The results of study showed a significant decreasing number of hospitalization Among patients in intervention group comparing with those in a control group at a p-value less than 0.01.

Conclusion :Implementation of Patient education can decrease in number of re-hospitalizations of patients with chronic heart failure

Keywords: heart failure, self-management, continues care, patient Education

■ Paper 8:

Challenges of Nurse Prescribing and the Need for Medication Education in Nursing Curricula: A Review in the Context of Advancing Pharmaceutical Sciences and Medical Practice

Authors:

¹Mohammad Abbasi, ²Murtadha Kanim Adea Aljebory

¹Nursing Care Research Center, Department of

Medical Surgical Nursing, School of Nursing and Midwifery, Iran University of Medical Sciences, Tehran, Iran

Mohamad-abbasi55@yahoo.com

<https://orcid.org/0000-0003-1698-5281>

²Community Health Nursing in Nursing Department University of Warith Al-Anbiyaa; Karbala, Iraq E-mail: murtadha.gh@uowa.edu.iq, Orcid: <https://orcid.org/0009-0006-1063-0331>

Abstract:

As pharmaceutical sciences evolve and healthcare systems seek more efficient models of care, the role of nurses in prescribing medications has gained increasing relevance. Nurse prescribing can improve access to treatment, reduce physician workload, and enhance patient-centered care. However, its implementation faces legal, ethical, educational, and clinical challenges—especially in regions with limited infrastructure or rigid professional hierarchies. This review emphasizes the urgent need to integrate **medication prescribing education into nursing curricula**, preparing future nurses for expanded clinical roles. Drawing on international experiences and regional realities, the paper offers recommendations for policy reform, curriculum development, and interprofessional collaboration to ensure safe and effective nurse prescribing.

Keywords: Nurse Prescribing, **Pharmaceutical** Education, **Medication** Management, **Nursing** Curriculum Reform, **Healthcare** Policy in Developing Countries

■ Paper 9:

Artificial intelligence in nursing and ethical aspects

Prof. Rabea Mohsen Ali

(Article presenter)

Prof.dr.Rabea.M.Ali@alkutcollege.edu.iq

Dr. Hashim Hamid Shabeeb

Prof. Mohammad Farzollah Abbasi

Yousef Asdooala Jamshid

Department of Adult Nursing, College of Nursing, University of Kut, Wasit, 52001, Iraq

Abstract:

Several studies have shown that artificial intelligence can be used in nursing care in various ways. It should be emphasized that using artificial intelligence as a complementary and auxiliary tool alongside the expertise and experience of nurses, not as a substitute for them, can have practical applications in nursing, including improving the quality of nursing care, improving decision-making, providing a clinical model of patient care, and providing health and medical services using clinical data with predictive models, documentation in nursing, processing disease data, diagnosing some diseases, reducing medical errors, and many other cases. Despite the numerous applications of artificial intelligence in nursing, several ethical issues and limitations have been raised in studies. The aim of this study is to examine the applications of artificial intelligence in nursing and examine its ethical aspects.

Findings

Several ethical issues have been raised in the use of artificial intelligence in nursing;

Impact on patient autonomy: The use of artificial intelligence in nursing care may affect patient autonomy and requires ensuring patient participation in the care decision-making process.

Informed consent: The use of AI in practice faces immediate challenges in integrating it with clinical issues, including how to coordinate informed consent.

Safety and transparency in guidelines: There is a need for safety and transparency in guidelines and regulations in the use of AI in healthcare.

Patient privacy: The use of AI in healthcare involves the collection of personal and sensitive data that must be protected from cyberattacks and the privacy of patient information must be maintained.

Accountability and transparency: There is a need for timely accountability and transparency in the development and use of AI in healthcare.

Patient data security

Be consistent with nursing values such as compassionate care and holistic care
Emotional and psychological support

Evidence validity, fairness of results, traceability of information, possibility of over-reliance on algorithms instead of human judgment

Disruption of social justice, bias in programs, transparency and explainability, data safety, respect for the human dignity of individuals, error and compensation, ethical audit, creating ethical policy and access to AI for all societies and guaranteeing the global implementation of data protection and their implementation are among the appropriate ways to deal with the ethical challenges of AI.

Conclusion: The results of the studies showed that the use of AI has numerous ethical issues and aspects. Nurses should note that the use of AI is a complementary and auxiliary tool alongside the expertise and experience of nurses, not as a replacement for them, and always pay attention to its ethical aspects.

Keywords: Artificial Intelligence, Nursing, Ethical Aspects

■ Paper 10:

Efficacy of Vibration Therapy on Sleep Disturbances in Patients with Restless Legs Syndrome Undergoing Hemodialysis

Amjed Abdulabbas Shraida¹ , Widad K. Mohammed²

¹ Lecturer, Department of Adult Health Nursing, College of Nursing, University of Kufa, Al-Najaf, Iraq, ORCID: <https://orcid.org/0000-0003-4751-5311> , email: amjada.alghazaly@uokufa.edu.iq

² Prof. Dr, Department of Adult Health Nursing, College of Nursing, University of Baghdad, Baghdad, Iraq, ORCID: <https://orcid.org/0009-0004-4251-6221> ,email: dr.widad@conursing.uobaghdad.edu.iq

Abstract:

Background: Patients undergoing hemodialysis therapy commonly report disturbances in their sleep, is seen in 80% of cases. RLS is one of the most common sleep disorders, causing drowsiness, and sleep deprivation in hemodialysis patients and puts on immunological and cardiovascular problems. So

the current study aims to find out whether vibration therapy improving sleep quality among patients with RLS undergoing hemodialysis.

Materials and Methods: This randomized controlled trial included 70 patients undergoing hemodialysis equally distributed into a study group (undergoing vibration therapy) and a control group (receiving routine care only) using a block randomization technique. To assess sleep quality, the Brief Pittsburgh Sleep Quality Index (B-PSQI) was used over three period of measurements (pretest, posttest one and posttest two)

Results: After applying vibration therapy, a significant improvement was observed in the study group, with more than half of the participants 57.1% reporting good sleep quality compared to only 11.4% at the beginning of the study. Conversely, the control group showed no improvement, with more than 90% continuing to report poor sleep quality across all three measures.

Conclusion: The study results demonstrates that the vibration therapy was effective in significantly improving sleep quality among the study group participants, while the control group showed no meaningful change over time.

Keywords: Sleep quality, Hemodialysis, End Stage renal Disease

■ Paper 11:

Foot Reflexology Effect on Preterm Physiological Response: A Quasi-Experimental Study

Sahar Shareaf Ghazi¹ & Adraa Hussein Shawq²

¹ Master of Paediatric Nursing, College of Nursing, University of Baghdad, Iraq. E-mail: sahar.safi2304p@conursing.uobaghdad.edu.iq

²Assistant prof. PhD Pediatric Nursing, College of Nursing, University of Baghdad, Iraq. Email: adraa.hussein@conursing.uobaghdad.edu.iq

Abstract:

Background: Preterm neonates frequently experience physiological instability, including cardiorespiratory irregularities and oxygen desaturation. Non-pharmacological interventions such as foot reflexology may offer supportive benefits in stabilizing these parameters.

Objective: To evaluate the effect of foot reflexology on physiological parameters (heart rate, respiratory rate, and oxygen saturation) in preterm neonates admitted to the Neonatal Intensive Care Unit.

Methods: This quasi-experimental study was conducted at the Neonatal Intensive Care Unit of Bent Al-Huda Teaching Hospital, Al-Nasiriyah City, Iraq, from May 3, 2025, to September 15, 2025. Ninety preterm neonates (gestational age 30-37 weeks) were recruited using purposive sampling and they allocated to either the intervention group (n=45), receiving foot reflexology for 20 minutes daily over three consecutive days, or the control group (n=45), receiving routine care only. Physiological parameters were assessed before and after intervention. Data were analyzed using SPSS version 26, employing descriptive statistics and Mann-Whitney U test for group comparisons.

Results: Baseline demographic characteristics were comparable between groups. Post-intervention analysis revealed significant improvements in oxygen saturation (SpO_2) ($p=0.001$) and respiratory rate ($p=0.001$) in the intervention group compared to controls. Heart rate showed a declining trend but did not reach statistical significance ($p=0.286$). Progressive improvements in all measured parameters were observed across the three-day intervention period.

Conclusion: Foot reflexology demonstrated significant beneficial effects on oxygen saturation and respiratory rate in preterm neonates, supporting its potential as a safe, non-invasive complementary intervention in neonatal intensive care settings.

Keywords: Foot reflexology, Preterm infant, Physiological response, Neonatal care, Oxygen saturation, Non-pharmacological intervention

■ Paper 12:

Exploring Nursing Leaders' Awareness of Patient Safety in Hospitals of Mosul City: A Qualitative Study

Karam Yaseen Fathi¹, Bilal Ahmed Essa², Hamad Jandary Jumaa³, Taha Khudhur Ali⁴

karam.yaseen@hu.edu.iq¹, bilal.ahmed@hu.edu.iq², Hamd.jandary@hu.edu.



iq3,taha.khudhur@hu.edu.iq4

1 (Department of Clinical Nursing Sciences, College of Nursing, , Al-Hadba University, Iraq)

2 (Department of Clinical Nursing Sciences, College of Nursing, , Al-Hadba University, Iraq)

3 (Department of Clinical Nursing Sciences, College of Nursing, , Al-Hadba University, Iraq)

4 (Department of Clinical Nursing Sciences, College of Nursing, , Al-Hadba University, Iraq)

Corresponding author: karam.yaseen@hu.edu.iq

Abstract:

Background and Purpose: Nurse leaders play a crucial role in maintaining patient safety, which is considered fundamental for healthcare professionals. Therefore, this study aims to discover awareness of the nursing leaders about patient safety.

Methods: The research study used a qualitative descriptive content analysis study design and a semi-structured interview tool. The participants were 9 nursing leaders with 6-17 years of work experience, Bachelor's and Masters' degrees, and were recruited from Mosul city hospitals. Data transcripts were analyzed using qualitative content analysis.**Results:** Four main themes were found: (i) Responsibility; (ii) Nursing leader challenges; (iii) Professionalism; and (iv) Resource needs. This finding demonstrated how patient safety can be enhanced.

Conclusion: The safety of patients and maintaining it have been affected by several factors, including the absence of specific error records, as well as a shortage of trained and specialized staff. Leaders have also indicated that teamwork, good communication, providing advanced equipment, specialized training in patient safety, and stable, trained staff all play a crucial role in improving patient safety.

■ Paper 13:

Maternal Management and Preventive Measures regarding Iron Deficiency Anemia in Children: An Assessment study

*Fadia Hussein Ali

**Haider Abd AL Ameer Twair AL Hamad

***Zainalabideen Yasser Jumaa

*Assistant prof. , PhD. Maternal and Neonatal Nursing Department ,College of Nursing , University of Al-Qadisiyah, Iraq. E-mail: Fadia.ali@qu.edu.iq .

**Lecturer, PhD. Adults Nursing, College of Nursing, University of Al-Qadisiyah, Iraq.

E-mail: haider.alhamad@qu.edu.iq

***Assistant instructor, Community Health Nursing, College of Nursing, University of Al-Qadisiyah, AL-Diwayniah, Iraq.

E-mail: zainalabideen.yasser@qu.edu.iq

<https://orcid.org/0000-0001-6398-0200>

Abstract:

Background: Iron deficiency anemia is the most prevalent dietary issue globally, particularly in underdeveloped nations. Particularly in low-income areas where access to healthcare and adequate nourishment is scarce. Like, Iraqi children nutrition which hinders their physical, mental development, and inhibited growth and learning.

Methodology: A descriptive study among (100) mothers having children under five years of age, selected by using a non-probability purposive sampling method. Data were collected using a structured questionnaire that was used to interview mothers in the Maternity and Pediatric Teaching Hospital in Al-Diwayniah City, Iraq, from 9/9/2024 to 15/4/2025. A pilot study was conducted to ensure clarity, reliability, and validity, and was reviewed by five experts from the College of Nursing at the University of Al-Qadisiyah. Analysis of the results was carried out using SPSS version 25, which includes both descriptive and inferential statistics.

Results: The study results indicate that the majority of mothers (58%) were aged 20-30 years, with 39% having completed secondary or high school education. Most participants (55%) were unemployed, and (89%) resided in urban areas. Additionally, (59%) reported insufficient monthly income, and (72%) had one child under five years old, and shows (51%) of them had a fair level of assessment of maternal management and preventive measures. The study also found a significant association between mothers' knowledge and their age, education level, occupation, , monthly income, and number of children (p-value < 0.05) excepting residency shows nonsignificant association.

Conclusions: More than half of participants had a fair level of assessment which consider acceptable level of practices regarding management and preventive measures regarding iron deficiency anemia and a significant association with some demographic features .

Recommendations: Implement targeted educational campaigns for mothers, especially younger and less educated ones, to improve their knowledge of IDA causes, symptoms, prevention, and treatment.

Keywords: Maternal, Management, Preventive Measures, Iron Deficiency Anemia, Children

■ Paper 14:

Evaluation of Nursing Competence and Quality of Patient Care regarding Toward Urinary Catheterization

Mohammed Jameel Wahab¹, Haider Nawaf Abed-Ali², Ahmed Barid Kayem³, Haider Kadhum Raddam⁴, Kadhim Jameel Awad⁵, Murtdha Abdulridha Ajel⁶, Zainalabideen Yasser Jumaa⁷, Huda Abdulsattar Mazeal⁸

1-Assistant . Lecturer. Mohammed Jameel Wahab, Community health nursing, College of nursing, University of Al-Qadisiyah , AL-Dewaynia, Iraq

E-mail mohammed.jameel@qu.edu.iq <https://orcid.org/0009-0004-3973-1334>

2-MSN. Haider Nawaf Abed-Ali College of Nursing/University of Karbala, Iraq.

Email: haider84nawaf@gmail.com

3-Assistant . Lecturer: Ahmed Barid Kayem Fundamentals Nursing College of nursing, University of Al-Qadisiyah AL-Dewaynia, Iraq

E-mail ahmed.barid@qu.edu.iq <https://orcid.org/0009-0002-2899-8856>

4- Haider Kadhum Raddam PhD. in Community Health Nursing, College of Nursing, University of Al-Qadisiyah ,AL-Dewaynia, Iraq.E-mail addresses: haider.Kadhum@qu.edu.iq

<https://orcid.org/0000-0003-3653-1690>

5- Kadhim Jameel Awad Assistant lecturer University of Al-Qadisiyah / College of Nursing

Email kadhim.jameel@qu.edu.iq

<https://orcid.org/0009-0008-7335-0470>

6-Murtdha Abdulridha Ajel Assistant instructor, mental Health Nursing, College of Nursing,

University of Al-Qadisiyah , AL-Diwayniah , Iraq.

murtdha.abdulridha@qu.edu.iq

7-Zainalabideen Yasser Jumaa Assistant instructor, Community Health Nursing, College of Nursing, University of Al-Qadisiyah , AL-Diwayniah , Iraq.

zainalabideen.yasser@qu.edu.iq

<https://orcid.org/0000-0001-6398-0200>

8- Huda Abdulsattar Mazeal MSc in Community Health Nursing Assistant Teacher College of Nursing, University of Al-Qadisiyah, Al-Diwanayah, Iraq

huda.abdulsattar@qu.edu.iq

<https://orcid.org/0009-0008-1507-7584>

Abstract:

Catheter-associated urinary tract infection (CAUTI) is one of the major device-associated hospital-acquired infections (HAIs) of the urinary tract in hospitals.

Aims: This study evaluated nursing competencies and the quality of patient care in urinary catheterization, aiming to (1) assess healthcare delivery quality, (2) improve nurses' technical competence, and (3) examine correlations between nursing skills and patient outcomes (e.g., reduced infections, increased



comfort).

Methodology: A cross-sectional analytical design was employed at Al-Diwaniyah Teaching Hospital, involving 120 nurses from high-catheterization units. Data were collected via structured questionnaires (Cronbach's $\alpha=0.82$), face-to-face interviews, and clinical records. Competence and care quality were measured using Likert scales, with Pearson's correlation analyzing relationships.

Results: Nursing Competence: High proficiency in hand hygiene (87.5% agreement, mean=4.2) and aseptic technique (76.6%), but critical gaps in complication management (58.3%) and patient education (55.8%). Care Quality: Routine complication assessments scored highest (77.5%), while CAUTI rates (40.0%) and supply adequacy (37.5%) were weakest. Correlations: Strong links between aseptic technique and complication assessments ($*r^*=0.51$, $*p^*<0.001$) and patient education with clear explanations ($*r^*=0.56$, $*p^*<0.001$). Ongoing training weakly correlated with audit systems ($*r^*=0.25$, $*p^*=0.032$).

Conclusions: Nurses excel in foundational skills but lack advanced competencies. Systemic issues (e.g., inadequate supplies, poor audits) hinder care quality. Competence strongly influences outcomes, yet training alone is insufficient without structural support.

Recommendation: this study recommended that implement simulation-based training focusing on managing complications, patient education, and troubleshooting catheter issues to Enhance Nursing Competence through Targeted Training. Also suggest conducting regular workshops on CAUTI prevention strategies and aseptic techniques to reinforce best practices.

Keywords: *Nursing competence, urinary catheterization, patient care quality.*

■ Paper 15:

Community Perspective regarding Quality of Provided Health Care Service and Their Trust in Healthcare System

Hayder Hamzah AL-Hadrawi, Ph.D., Prof University of Kufa, Faculty of Nursing, AL-Najaf, Iraq Email. hayderh.alhadrawi@uokufa.edu.iq

Abstract:

Introduction: Existing definitions and measurement approaches of quality of health care often fail to address the complexities involved in understanding quality of care. It is the perceptions of quality, rather than clinical indicators of quality, that drives service utilization and are essential to increasing demand.

Aim: The recent study aims to the relationship between individuals' satisfaction with the quality of healthcare and their trust in healthcare services.

Method: A descriptive correlational design was used to meet the study objectives. A convenience sample of (N = 297) male and female participants. A three parts questionnaire was used to meet the study objectives. The first part includes participants' demographic information. The second part is the Short Assessment of Patient Satisfaction (SAPS-7). The third part is the Public Healthcare System Trust Scale-23.

Results: Findings reveals that 60% of participants reported being satisfied with their healthcare provider, while 40% reported being unsatisfied. A small percentage of respondents (12.8%) reported having a high level of trust in health care professionals; whereas, the remaining reported a trust levels ranged between no trust (4.4%) to moderate level of trust (48.8%). there is a high statistically significant relationship between participants' satisfaction with healthcare services and their trust in healthcare professionals ($r = 0.778$, $P = 0.0001$).

Conclusion The findings of this study indicates that satisfaction and trust are positively correlated and one can influence the other. This indicates that healthcare care professionals are the key players in the caring process and they should work on both directions, building trust with clients to improve satisfaction and improve clients' satisfaction to build trusting relationship.

■ Paper 16:

Nurses' Perspectives on the Challenges Hindering the Implementation of the Nursing Process: A Qualitative Study

Hawraa Razzaq Kadhim^{A,B} and Prof. Dr. Shatha Saadi Mohammd^C

^A Ph.D. Student, Adult Nursing/ College of Nursing, University of Babylon, Iraq.

^B Lecturer in Adult Nursing, University of Al-Ameed, Iraq.

^C Ph.D. in Adult Nursing, University of Babylon, Iraq.

Email ID: hawra.sawadi.nurh106@student.uobabylon.edu.iq

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Challenges Hindering the Implementation of the Nursing Process: A Qualitative Study. *Journal of Neonatal Surgery*, 14(21), 347-363.

Abstract

Globally, the cornerstone of the nursing profession is the nursing process (NP). It is considered a scientific method accepted

worldwide to guide procedures and provide the best quality of dynamic nursing care. Despite the benefits of the nursing process and the efforts of nursing professionals to implement it, the use of the nursing process is still lagging in most hospitals.

This study aims to explore the difficulties that nurses face while putting the nursing process into practice. The study was conducted in the Al-Najaf Al-Ashraf Health Directorate across five teaching hospitals: Al-Zahraa Hospital, Al-Furat AlAwsat Hospital, Al-Sadder Hospital, Al-Hakim Hospital, and Al-Najaf Hospital. A purposive sample of 12 nurses was selected, most of whom hold a Baccalaureate degree in Nursing with experience ranging from 3 to 15 years.

The findings from the qualitative approach reveal several challenges. These include workload difficulties, such as lengthy work hours and extra tasks that

are not part of a nurse's duties, as well as a lack of knowledge and training directly relevant to the nursing process. Additionally, there is a shortage of material and human resources. Other significant factors include the absence of incentives, such as poor pay, lack of professional autonomy, and insufficient support from colleagues or management. The lack of clear job descriptions, poor supervision, and the disconnect between what nurses learn in school and the realities of the hospital healthcare system were also identified as major issues.

Five themes emerged from the participants' perspectives on the challenges hindering the implementation of the Nursing

Process: Professional Growth and Training, Overwhelming Workload, Insufficient Resources, Lack of Encouragement, and Management Support.

Keyword: Nurses' Perspectives, Challenges, the Implementation of the Nursing Process

■ Paper 17:

Anxiety Level for Patients Undergoing Cardiac Catheterization: A pre-experimental design

¹Hasan Naeem Kareem, ²Mohammad Basim Nadheer ¹Zainalabideen Yasser Jumaa ²Ali Falah Hassan ²Abbas Fadhil Mousa, ³Nasir Muwfaq Younis

Affiliations.

College of Nursing , University of Al Qadisiyah , Iraq

Email: hassan.naeem@qu.edu.iq

Email: zainalabideen.yasser@qu.edu.iq

College of Nursing , University of Al-Ameed , Iraq

Email: m.hassani@alameed.edu.iq

Email: falahali048@gmail.com

Email: ab.hussainy@alameed.edu.iq

College of Nursing, University of Mosul, Iraq

Abstract:

Background: A major factor in lowering patients' symptoms of worry and panic is educating them prior to coronary angiography. The way that patients express their fear and anxiety depends on their gender. Nurses are thought to play a vital and essential role in patient education.

Objectives: The purpose of the study is to assess how effectively an instructional program affects patients' anxiety levels during cardiac catheterization and to find out the relationship between patients' anxiety levels and their demographic characteristics.

Methodology: A pre-experimental design (one group pretest-posttest design). The study was conducted using a purposive sample of 51 adult patients of both sexes who were admitted to the cardiac catheterization unit at the Critical Care Unit of the Imam Hassan Al-Mujtaba Teaching Hospital. sections: two instruments have been used. Section I: The demographic data form for the patient includes seven items: age, gender, educational level, marital status, residence, occupational level, and smoking history. Section II: The 20 components that make up the State-Trait Anxiety Inventory (STAI).

Results The study results indicate that the patients exhibited severe levels of anxiety with a mean (2.51) before the application of the program. While the patients exhibit moderate levels of anxiety with a mean (1.69) after the application of the program. Additionally, the study sample's overall responses during the pre-test and post-test periods differed in a highly statistically significant way, with a p-value of 0.000.

Conclusion: The study shows that there is a positive effect of instructional Programs on Anxiety levels for patients undergoing cardiac catheterization where decreased levels of anxiety from severe to moderate, where the p-value for the two measurement periods was 0.000 HS.

Keywords: Anxiety, Cardiac Catheterization, A pre-experimental design

■ Paper 18:

Evaluation of Bedridden Patients' Pressure Ulcers Using the Braden Scale

1-Assistant . Lecturer. Mohammed Jameel Wahab Community health nursing, College of nursing, University of Al-Qadisiyah From ,AL-Dewaynia, Iraq

E-mail mohammed.jameel@qu.edu.iq

<https://orcid.org/0009-0004-3973-1334>

Tel: +9647717469057

2-Kadhim Jameel Awad Assistant lecturer, University of Al-Qadisiyah / College of Nursing

Email kadhim.jameel@qu.edu.iq

Orcid : <https://orcid.org/0009-0008-7335-0470>

3-Murtdha Abdulridha Ajel

Assistant instructor, mental Health Nursing, College of Nursing, University of Al-Qadisiyah , AL-Diwayniah , Iraq. murtdha.abdulridha@qu.edu.iq

4-Zainalabideen Yasser Jumaa

Assistant instructor, Community Health Nursing, College of Nursing, University of Al-Qadisiyah , AL-Diwayniah , Iraq. zainalabideen.yasser@qu.edu.iq

<https://orcid.org/0000-0001-6398-0200>

5-MSN. Haider Nawaf Abed-Ali

College of Nursing/University of Karbala, Iraq.

Email: haider84nawaf@gmail.com

Abstract:

Background: A pressure injury, often known as a pressure ulcer, it occurs locally damage made through pressure or shear pressure applied to the outermost layer of Skin or tissues beneath, typically covering the protrusion of bone. The kind of Pressure ulcers is long-term injury. Among the chronic



wounds that do not heal adequately are pressure ulcers, diabetic foot ulcers, and venous leg ulcers. Permanent damage may frequent among older adults, as the strength of the skin declines with aging, making It has over sensitive to stress, friction, and dampness. It can hurt to have pressure injuries, particularly, while your Skin is damaged as well as opening. The objective of this study was to determine and forecast the risk variables for pressure ulcer

Methodology: - Design of the Study. A descriptive study design has been conducted to identify risk of pressure ulcers development in intensive care unit at Al- Diwinyah Teaching hospital. Sample and sampling: The patients are the study's sample admitted to the Al- Diwinyah Teaching hospital through non probability Convenience sample. Inclusion Criteria of the sample: Included sample: Adult patients, Intensive care unit under mechanical ventilation patients, admitted with more than 2 days in ICU, and Patient have no pressure ulcers. Excluded sample: Patients under 18 years old.

Results and ConclusionThis study's findings include valuable insights into the demographics and factors of risk related to bed ulcers among patients at (ICU) at Al- Diwinyah Teaching hospital. The findings indicate that a significant portion of the patient population is the very more likelihood for growth pressure ulcers, with 60.7% classified as such based on the Braden scale. Most clients are mechanically ventilated, with a high prevalence to comorbidities, particularly respiratory disorders. The data also reveal a concerning trend of immobility and inadequate nutrition among these patients, further exacerbating their risk of developing bed ulcers.

Recommendations: Enhanced Risk Assessment: Regular and thorough assessments of patients using the Braden Scale should be implemented to identify those to high danger for bed ulcers promptly, **Multidisciplinary Care Approach:** Encourage a collaborative approach involving nurses, physicians, nutritionists, and physical therapists to address the multifaceted needs of ICU patients. This should include mobility programs tailored to individual patient capabilities ,**Nutritional Support:** Develop and implement robust nutritional intervention plans for ICU patients to ensure adequate caloric and protein intake, which is essential for skin integrity and healing ,**Skin Care Protocols:** Establish standardized skin care protocols that include frequent repositioning of immobile patients in addition, pressure-relieving items such as specific mattresses and cushions are used.

■ Paper 19:

A study of occupational health hazards among nurses at Al- Zah- raa Teaching Hospital

Ali Faris Abdul Hussein^{1*}

Author Affiliation

Department of Community Health Nursing, College of Nursing, University of
Kut, Wasit, Iraq,52001.

ID /0000-0002-5107-4865

Corresponding Author: Ali Faris Abdul Hussein / Assistant Professor/ De-
partment of Community Health Nursing, College of Nursing, University of
Kut, Wasit, Iraq,52001.

E-mail: Ali.F.Alsaadi@alkutcollege.edu.iq. ORCID /0000-0002-5107-4865

Abstract:

Background: Occupational health hazards in nursing are a global concern, as nurses form the backbone of healthcare systems worldwide. The working conditions in hospitals and medical facilities subject them to continuous risks, making it essential to examine and address these hazards systematically.

Objectives: To identify the common occupational health hazards affecting nurses at Al-zahara teaching hospital and assess the impact of these hazards on nurses' physical and mental health.

Methodology: A descriptive analytic study design, an assessment approach has been applied for the purpose of achieving the earlier stated objective. The present study is a study of occupational health hazards among nurses at Al-zahraa teaching hospital. This study started from 1st November 2024 to 10th April 2025. A non-probability "purposive" sample of (100) nurses from different fields including emergency, consultations, internal medicine, surgery, gynecology, pediatrics and burns units was used for the current study to identify the occupational hazards from samples. Data were collected through the use of a questionnaire designed and constructed by the researcher were used for data collection and measuring the variable under the study. Data are analyzed



through using the Statistical Package of Social Sciences (SPSS, Version 27) performed through the use of descriptive and inferential statistical data analysis approaches.

Results: The findings indicate a critical need for enhanced preventive measures of nurses' health risks; nurses face significant health risks due to the nature of their work including infection and illness and stress and psychological pressure.

Conclusions: The present study concluded that the overall assessment of occupational hazard among nurses was within the high level and the current study found that there is a highly significant between nurses' socio-demographics characteristics and occupational hazard.

Recommendations: The study recommends the urgent improve nurses' health and reduce health hazards including Provide training and education for nurses on health hazard and their prevention and improve the work environment for nurses to reduce health hazard.

Key words: Occupational health, hazards, nurses.JSN-L22

■ Paper 20:

Non-Pharmacological Interventions to Reduce Pain and Fear in Children Undergoing IV Cannulation: A Randomized Controlled Trial

Riyadh Saad. Atshan^{1*}, Ridha M. Lefta², Ehab Al-Din. Haider Saddam², Ali Alaa. Alhashmi²

Abstract:

Objective: Distraction techniques are among the most effective nursing interventions for managing pain and fear in children undergoing IV cannulation. Techniques such as bubble blowing, cartoons, and the Buzzy device help children cope with procedural pain and anxiety better. This study aims to assess the levels of pain and fear experienced during IV cannulation in preschool-aged children and to determine the effectiveness of distraction techniques in reducing these levels.

Methods and Materials: A randomized controlled trial was conducted on 60 preschool-aged children undergoing IV cannulation at Karbala Children's Teaching Hospital. Participants were randomly assigned to three intervention groups (Buzzy device, cartoon film, and bubbles game) and a control group. Pain levels were measured using the Wong-Baker FACES Pain

Rating Scale, and fear levels were assessed with the McMurtry Children's Fear Scale during and after the procedure. Data analysis was performed using SPSS.26. Descriptive statistics and ANOVA (Analysis of Variance) were employed to evaluate group differences, with a significance level set at $p \leq .05$.

Findings: Findings indicate that the Buzzy device was most effective in reducing pain ($P < 0.001$). At the same time, the bubbles game proved most effective in reducing fear levels ($P < 0.001$) following the application of the distraction techniques.

Conclusion: The study concludes that targeted distraction techniques, such as the Buzzy device and bubble blowing, can effectively manage and reduce pain and fear in children undergoing venous cannulation. These findings have practical implications for healthcare professionals, equipping them with effective strategies to improve the pediatric patient's experience during IV cannulation.

Keywords: Non-pharmacological intervention, Pediatric Pain and Fear, IV Cannulation, Distraction Techniques, Randomized Controlled Trial.

■ Paper 21:

Efficacy of Mothers' Adherence to Safe Sleep Guidelines Practices for Infants and Young Children

Noora Farhan Hassan Al Abedi ¹, Mohammed Hakim Shamran Al-Hchaim ², Maha Salah Razzaq ³, Thikra Abdul Kadhim ⁴

¹ Ph.D. Pediatric Nursing, Faculty of Nursing / University of Kufa, Iraq.

² Ph.D. Adults Nursing, Faculty of Nursing, University of Kufa.

^{3,4} MSc Department of Maternal and Newborn Nursing, Faculty of Nursing, University of Kufa,

E-Mail: nora.farhan@uokufa.edu.iq

E-Mail: muhammedh.alhjem@uokufa.edu.iq

Abstract:

The primary objective of the study was to assess the effectiveness of mothers' adherence to safe sleep guidelines for infants and young children. Methodology: A descriptive, cross-sectional study design was adopted in the present study to achieve the early stated objectives. The study started from October 2024 to April 2025. Purposive Sample of 117 mothers with children under one year. The final study Sample is collected from the Health Directorate of Al-Najaf Al-AI-Ashraf/ Primary Health Care Centers. The results revealed that, overall, maternal awareness of key safe sleep practices was poor. This finding is crucial as it reveals that while mothers might be aware of safe sleep recommendations, they are not always implementing them. Infant safety is directly at risk due to this inconsistent adherence. Significant associations were observed between mothers' adherence to safe sleep guidelines practices for infants and young children and socio-demographic data such as maternal age, education level, and economic status. The study concludes that mothers exhibit limited awareness and inconsistent implementation of safe sleep practices. The study recommended the following: Further research is needed to pinpoint the specific barriers that prevent mothers from consistently following safe sleep guidelines, as this is essential for developing effective interventions to improve caregiver performance and reduce the risk of sleep-related infant mortality

■ Paper 22:

Effect of Nurse-led Pain Management On Quality Of Life Mediated by Sleep Quality In Patients with Chronic Musculoskeletal Disorders

Faris HI¹, Khanjary Mo², Badr SH³, Hussein BH⁴

¹Department of Laboratory and Clinical Sciences, Faculty of Pharmacy, Jabir Ibn Hayyan University for Medical and Pharmaceutical Sciences, Najaf, Iraq. Email: haitham.i.faris@jmu.edu.iq.

²Ass. Lect., adult Nursing Department/ College of Nursing, Al-ameed Univer-

sity, Iraq,

³Department of Paediatric Nursing, Faculty of Nursing, Al-Ameed University, Karbala, Iraq.

⁴Department of Adult Nursing, Altoosi University College, Najaf, Iraq.

Abstract:

Background: Chronic musculoskeletal disorders (CMSDs) often negatively impact quality of life, with pain and sleep disturbances being major contributors. Nurses play a pivotal role in implementing pain management strategies, which may indirectly influence quality of life through sleep quality. This study aimed to investigate the effect of pain management strategies followed by nurses on the quality of life in adults with chronic musculoskeletal disorders, with sleep quality as an intermediary variable.

Methods: A cross-sectional study was conducted on 280 adults attending the outpatient rehabilitation clinic of a university hospital in Najaf city. Participants were selected based on eligibility criteria and were surveyed using four validated instruments: the Pain Management Inventory–Nurse Version (PMI-N), the Pittsburgh Sleep Quality Index (PSQI), the WHOQOL-BREF, and a sociodemographic questionnaire. Data were analyzed using descriptive statistics, Pearson correlation coefficient, and mediation analysis (PROCESS macro, Model 4).

Results: Pain management strategies were positively associated with quality of life ($r = 0.53$, $p < 0.01$) and negatively associated with poor sleep quality ($r = -0.46$, $p < 0.01$). Sleep quality was also negatively related to quality of life ($r = -0.58$, $p < 0.01$). Mediation analysis confirmed that sleep quality partially mediated the relationship between pain management and QoL (indirect effect $\beta = 0.23$, 95% CI: 0.14-0.34).

Conclusion: Effective nurse-led pain management improves quality of life in patients with chronic sleep disorders, in part due to improved sleep quality. Training programs should focus on integrated pain strategies that address both pain and sleep disorders.

Keywords: Pain management, nurses, sleep quality, quality of life, musculoskeletal disorders, mediation analysis.

■ Paper 23:

Association Between body fat and bone Mineral Density among Menopausal Women in Iraq

1. **Ridha. M. Lefta / Ph.D – Assist.Prof /** Community Health Nursing Department, College of Nursing, University of Al-Ameed, Ministry of Higher Education and Scientific Research, POBox 198 Iraq. Dr.Radha.M@alameed.edu.iq.

2. Ali alaa alhashmi / Community Health Nursing Department, College of Nursing, University of Al-Ameed, Ministry of Higher Education and Scientific Research. Alialaraji91@gmail.com

3. **Ahmed Mohammed Jasim Shlash/ Ph.D.** Adults Health Nursing/ College of Nursing, University of Babylon, Iraq. Email: dr.ahmed.shlash@uobabylon.edu.iq.

4. **Riyadh Abdulkhudhur Hasan Alkhawarah, AL- Zahrawi University** Riyadhalkhawarah@gmail.com

5. **Mohammed Khanjary / M.Sc.** Adult Health Nursing, College of Nursing, University of Al-Ameed, mohammed.khanjary@alameed.edu.iq

Corresponding author: Ridha mohammad lefta -Assiss- Prof- Ph.D .Community Health Nursing Department, College of Nursing, University of Al-Ameed, , Iraq. Dr.Radha.M@alameed.edu.iq

Abstract:

Background: Menopause brings hormonal changes that can lead to reduced bone density, increasing the risk of osteoporosis and fractures in women. The relationship between body fat and bone mineral density (BMD) in menopausal women is complex and not fully understood. Some studies suggest that increased body fat may protect against bone density loss, while others indicate a negative correlation between body fat and BMD.

Objective: To evaluate the association between body fat and bone mineral density through use DEXA scan. To measure the association between bone mineral density and demographic data for menopausal women over 45 years' old.

Materials and Method of study: the paper design is a correlation study design. The study subjects are enrolled 150 women who suffer from bone health problems and attend a clinic in Babylon government. Purposive sampling was utilized to select menopausal women.

Result: The results concerning with demographic data indicate the majority of study sample are within (63-70) years within age group and residence in urban area. The study results also show that, the bone mineral density and trabecular bone score parameters about strong of the bone are osteopenia among women with menopause. The correlation between t. score and clinical data indicate for a positive correlation except, fracture history the correlation was negative with T. score. The relationship between body fat and bone mineral density by T. score test is negative.

Conclusion & Recommendation: The study conclude for indeed relationship between body fat and bone mineral density among menopausal women, the women with higher body fat percentages tend to have lower bone mineral density, placing them at higher risk for a dangerous complication. In order to support bone health, menopausal women should maintain a healthy body weight and do regular weight-bearing activities like strength training or walking. To maintain optimum bone mineral density, adequate consumption of calcium and vitamin D is also essential. It's important to inform a menopausal woman about instruction and intervention program to engage in a periodic examination and assessment for a bone health.

Key word: bone mineral density, menopause, DEXA scan, T. score.

■ Paper 24:

A Study of Patients with Cerebral Vascular Accident (CVA) Regarding to Risk Factors in Iraq.

Ali. F. Hassan

1, Ahmed Mohammed Jasim Shlash 2

, Abbas F.Moussa3

.1Ali. F. Hassan/ Assistance- lecturer/ Community Health Nursing Department, College of Nursing,

University of Al-Ameed, Ministry of Higher Education and Scientific Research.

Falahali048@gmail.com

2 Ahmed Mohammed Jasim Shlash/ Assistance- lecturer/ Adults Health Nursing/ College of Nursing,

University of Al-Ameed, Ministry of Higher Education and Scientific Research.

Ahmedmoh1994.ar@gmail.com

3Abbas F. Moussa/ Assistance- lecturer/ Adults Health Nursing/ College of Nursing, University of AlAmeed, Ministry of Higher Education and Scientific Research.

Fadhelabbas1974@gmail.com

Abstract:

The findings of the present study indicated that the Cerebral Vascular Accident patients was ischemic stroke more than hemorrhagic who O+ blood group and ischemic attack in morning as a time and other risk factors.

Objective: this study was to identify the demographic and Clinical data of the patient with Cerebral Vascular Accident (CVA).

Materials of the study: The study a survey descriptive study, the sampling it is nonProbability “purposive” sample was a conducted on 138 patients that include outpatients who were diagnosed with CVA by CT scan and MRI brain attending the Neurological clinic in AL-Najaf AL-Ashraf city to receive a medication in privet neurology clinic in AL-Najaf city for period from January 2019 to December 2020

Results: (44.2%) of the study sample are within (50-59) years old, (60.9%) are male,

(97.8%) are married, according to level of education was (64.5%) are illiterate, also (67.4%)no smoking and (38.4%) was worker according to occupational level, according to clinical data was (89.9%) patient with ischemic stroke according to stroke type, (44.9%) right paralysis regarding to side paralysis and (60.1%) at morning in time attack of stroke, patient (50.75) with DM, (68.8%) patient with HT and (65.2%) from patients with blood group O+.

Conclusion: Blood type AB is associated with an increased risk of stroke that

is not

attenuated by conventional stroke risk factors and factor VIII levels were associated with 60% of the association. While blood type AB is rare in the U.S. population, it is a significant stroke risk factor and may play an important role in stroke risk in these individuals.

Recommendation: Regular physical activity is recommended; A diet low in salt and

saturated fat, high in fruit and vegetables and rich in fiber is recommended; avoidance of heavy alcohol and use of sympathomimetic drugs may decrease risk of ICH Subjects with an elevated body mass index are recommended to take a weight-reducing diet; Antioxidant vitamin supplements are not recommended; A healthy lifestyle, consisting of abstinence from smoking, low-normal body mass index, regular exercise and healthy diet, is associated with a reduction in strokes.

Keywords: ABO Blood Group System; Stroke; Time of attack; Ischemic and hemorrhagic

stroke, DM, HT.

■ Paper 25:

Analysis of Communicable Disease Trends in Children: Babylon Governorate, Iraq from 2022 to 2024

¹Sahar Hassan, ²Kareem Jebur Dhaidan.

¹Department of Pediatric Nursing, Faculty of Nursing, University of Babylon, Iraq.

²Department of Pediatric Nursing, College of nursing, University of Kerbala, Iraq.

sahar.hassanissa@uobabylon.edu.iq

Kareem.j@uokerbala.edu.iq

Abstract:

Background: *Communicable disease control has long been a focus of global health policy, there have been trend in communicable diseases incidence among children in Babylon Province especially pneumonia and measles, that transmitted by droplet and air-born. This study describes the epidemiological profile and trends of communicable diseases among children in Al-Hilla City, Babylon Governorate, Iraq.*

Method: *Retrospective study design to assess epidemiological profile of 7851 children under 15 years from January 1, 2022, to December 31, 2024. Descriptive statistics and chi-square tests were used to analyse trends and distributions by age, sex, and time.*

Results: *the majority of reported communicable diseases were droplet and air-borne infections, accounting with (89.1%). distribution as the following; Pneumonia 59.3 % and measles 21.0 % as a major percent among cases. While disease that occur by other mode transmitted infections constitute minimum ratio. Significant variations were observed in age and sex distributions for specific diseases. A concerning surge in measles cases was noted from 2023 onwards, following zero cases in 2022.*

Conclusion: *Respiratory-transmitted diseases predominate, most notably pneumonia and measles, followed by gastrointestinal-transmitted diseases, most notably hepatitis A. While a small percentage of diseases are transmitted through blood and arthropods, with variations between the species themselves. The dramatic resurgence of measles highlights critical vulnerabilities in immunization programs and outbreak preparedness. Public health interventions must prioritize strengthening vaccination coverage, respiratory infection control, and sanitation programs targeted at high-risk age groups.*

Keywords: *communicable diseases, epidemiology, disease transmission, children, Iraq, vaccination, outbreak.*

■ Paper 26:

An investigation into the determinants of Healthy Lifestyle Behaviors among Students

Sarab Nasr Fadhil¹, Hashem Hamed Shabib², Rabea M. Ali³

**Ph.D., Assistant Prof. University of Baghdad, College of Nursing, Maternal and Neonate Nursing Department, Baghdad, Iraq*

**Ph.D., instructor. Department of Nursing, Kut University, Wasit, 52001, Iraq*

**Ph.D., Prof. Department of Nursing, Kut University College, Wasit, 52001, Iraq*

Abstract:

Background: University students are exposed to lifestyle-related challenges that may affect their physical, mental, and social well-being. Limited evidence exists regarding lifestyle behaviors among students in Iraqi universities.

Objectives: This study aimed to evaluate the lifestyle behaviors of undergraduate students at the University of Al-Kut and examine their association with selected socio-demographic variables.

Methodology: A descriptive cross-sectional study was conducted at the University of Baghdad/College of Nursing, during the academic year 2024. The sample included 150 students from the Colleges of Dentistry, Pharmacy, and Nursing, who were selected using a non-probability convenience sampling technique. Data were collected through a structured questionnaire adapted from the health-Promoting Lifestyle Profile (HPLP), which covered domains such as health responsibility, physical activity, nutrition, stress management, spiritual growth, and interpersonal relations. Content validity was ensured by a panel of experts, and reliability was confirmed through a pilot study. Data collection was carried out through direct interviews after obtaining informed consent. Statistical analysis was performed using descriptive and inferential statistics, including frequencies, percentages, and one-way ANOVA to test associations between lifestyle behaviors and selected sociodemographic variables.

Results: Most participants (64.7%) were aged 19–24 years, 79.3% were single, and 86.6% resided in urban areas. Regarding BMI, 68.6% were classified as obese (Class I and II). Most students (74%) demonstrated a moderate level

of healthy lifestyle behaviors, while only 21% reported a good level. No statistically significant associations were found between lifestyle behaviors and age, marital status, residency, or BMI ($p > 0.05$).

Conclusions: University students in Al-Kut demonstrated moderate levels of healthy lifestyle behaviors, with high rates of obesity and limited adherence to balanced diets and physical activity. Targeted interventions are recommended to promote healthier lifestyles and improve student well-being.

Keywords: Lifestyle behaviors, undergraduate students, obesity

■ Paper 27:

Alleviating Vaccination pain and fear: utilize non pharmacological methods among children under five years in primary health care centers: Randomized control Trial

Ridha. M. Lefta / Ph.D – Prof / Community Health Nursing Department, College of Nursing, University

of Al-Ameed, Ministry of Higher Education and Scientific Research, POBox 198 Iraq.

Dr.Radha.M@alameed.edu.iq . <https://orcid.org/0000-0002-2676-2455>.

Ghazwan Abdulhussein Al-Abedi, Assist Pro/ Community Health Nursing Department, College of Nursing,

University of Karbala Email: ghazwan.a@uokerbala.edu.iq ORCID: 0000-0002-1572-623X

Rabab Khalil Ibrahim(MSc), Nursing Department , Al-Zahrawi University, Kerbala, Iraq, Email:

rabab@g.alzahu.edu.ig ORCID:0009-0002-1468-3044.

Ali Alaa Alhashmi (MSc) Adult Health Nursing Branch, , College of Nursing, University of Al-Ameed, Email: al.hashmi@alameed.edu.iq.

Corresponding: Ridha. M. Lefta / Ph.D – Prof/ Dr.Radha.M@alameed.edu.iq

Abstract:

Background: Alleviating pain during childhood vaccination can help to prevent distress, development of needle fears and subsequent health care avoidance behaviors, such as non adherence with vaccination schedules. More positive experiences during vaccine injections also maintain and promote trust in health care providers.

Study objectives: To assess the pain and fear through vaccination Among children under five years and to measure alleviating vaccination pain and fear by Utilize non-pharmacological methods for pain Management.

Methodology: Randomized control Trial (RCT) design in Karbala health director selected by simple random sample were (3) optimal primary health care centers A randomized controlled trial

was implemented from January to February 2024 across three primary health care centers in Karbala, Iraq, selected through random sampling. A total of 100 children, aged 6 months to less than 5 years, were enrolled and allocated into four arms—three intervention groups and one control group—using block randomization.

Results: the largest proportion age of the study sample for all groups are between 610 month and more than half from male and have increase in weight. the study results indicate about an evaluation of fear for all groups is mild fear and the best of method non-pharmacological for alleviating of fear is by buzzy method. But the Control group was high. the study results indicate about an evaluation of fear for all groups is little pain and the best of method nonpharmacological for alleviating of fear is by buzzy method. But the Control group was high.

Conclusion: The effectiveness of non-pharmacological methods in alleviating fear and pain, the control group showed higher levels of fear and pain, emphasizing the importance of implementing such techniques during vaccinations to Encourage development this

method. The study concluded have most effective methods to reduce both fear and pain during vaccination and there is different effectiveness between non-pharmacological method.

Overall, the study underscores the significance of employing nonpharmacological

interventions to mitigate fear and pain during pediatric vaccinations, ultimately enhancing the vaccination experience for children. Recommendation: Healthcare facilities must consider incorporating these methods into routine vaccination procedures to enhance the experience for children and caregivers about receive of vaccination, Healthcare providers should receive training on the proper use of non-pharmacological methods for pain and fear management during pediatric vaccinations and Continued research and innovation in the field of pediatric pain and fear management are necessary to identify new interventions and improve about vaccination.

Keyword: non-pharmacological method, vaccination, fear, pain

■ Paper 28:

Women's Self-Care Behavior Regarding Abnormal Vaginal Discharge

Sajidah S. Oleiwi, Ph.D.*1, Rabab Khalil Ibrahim, M.Sc.*2, Zainab Ali Chafat M.Sc.*3, Alyaa

Aamir kamil M.Sc.*4, Heba Sajad Al-Esawy M.Sc.*5

1 * Department of Maternal and Neonate Nursing, College of Nursing in Kerbala University,

Iraq, Email: sajidah.s@uokerbala.edu.iq

2* Department of Nursing, Al-Zahrawi University, Karbala, Iraq, Iraq., Email: rabab@alzahu.edu.iq

3* Department of Maternal and Neonate Nursing, College of Nursing, University of Al-Ameed,

Karbala, Iraq Email: zainabAlich92@gmail.com

4* Psychiatric and Mental Health Nursing College of Nursing, University of Al-Ameed, Karbala,

Iraq Email: aliaa.alameed@gmail.com

5* Alhindya Teaching Hospital, Kerbala health department, Ministry of Health, Karbala, Iraq

Email: Hebasajad2017@gmail.com

Abstract:

Background: Vaginal discharge Many women experience this common gynecological condition during their reproductive years, and it often requires ongoing medical attention. This condition results from the natural secretions of cervical and Bartholin's glands, combined with the exfoliation of vaginal epithelial cells, a process aided by bacteria that help preserve vaginal acidity. Instead of being a standalone illness, abnormal vaginal discharge often indicates the presence of other diseases such as genital infections or sexually transmitted infections.

Objectives: Assess Self-care behavior used by women regarding abnormal vaginal discharge

Methods: A descriptive /cross- sectional study design was conducted from 11th September 2023 to 17th August 2024. A non-probability (purposive sample) was used to select 100 women at Gynecology and Obstetrics Teaching Hospital in Karbala City of Iraq. Valid and reliable checklist tool was used to conducted to assess the association between illness perception and health self-care behaviors used by women in Relation to Abnormal vaginal discharge. while the data was collected through the questionnaire and by the means of an interviewing technique

Results: The results reflect descriptive statistics there is a significant association between self care of women regarding abnormal vaginal discharge and their (the duration of the secretions, what is the normal smell of vaginal secretions, abnormal color of vaginal secretions) at p-value <0.05 while there is a non- significant relationship with current health status

Conclusion: Based on the findings of the present study most of the study participants were within the age of 26-31, the majority of the study participant were married, lived in urban area and Elementary school graduates. Overall level of Self-care behavior for perineal hygiene, during menstruation, seeking counselling and abnormal vaginal discharge is high level

Keywords: abnormal vaginal discharge, self-care

■ Paper 29:

Awareness of Pre-Graduating Female Students Concerning Early Detection of Breast Cancer

Hadeel Rasheed Seger¹, PhD

¹ Department of Maternal and Neonate Nursing, Faculty of Nursing, University of Kerbala, Iraq.

Email: hadeel.r@uokerbala.edu.iq

ORCID: 0009-0006-1838-3283

Taher Mohsin Al-Fahham², MSN

² Department of Adult Nursing, Faculty of Nursing, University of Kerbala, Iraq.

Email: Taher.m@uokerbala.edu.iq

ORCID: 0000-0001-5772-5107

Hussein Khelf Kitab³, PhD

³ Department of Adult Nursing, Faculty of Nursing, University of Kerbala, Iraq.

Email: hussein.kh@uokerbala.edu.iq

ORCID: <https://orcid.org/0009-0005-0866-6266>

Abstract:

Background: Breast cancer is one of the primary causes of death for women across the globe, especially in developing regions where access to early detection services is limited, leading to later diagnoses and worse outcomes. Raising awareness can serve as a powerful strategy to fight this disease by encouraging early detection, which can help decrease morbidity and mortality rates.

Objectives: To assess the awareness of Lpre graduating female students regarding early detection of breast cancer.

Methods: A descriptive design was conducted from 27th January 2024 to May 2025 at Kerbala University. A non-probability convenience sampling was used to select 100 pre graduating female students. Valid and reliable ques-

tionnaire was used to collect data. The tool used in this study comprised of two parts: Demographic variables, and the awareness of students regarding early detection of breast cancer. **Results:** The most of female students were pre graduated from humanity colleges, with age group of (21-24) years. The level Awareness of female students regarding early detection of Breast Cancer was moderate. There is a statistically significant relationship between medical and Non-Medical students and their awareness, also There is a significant relationship among the level of awareness and family history of breast cancer, clinical breast examination experience, attending seminars on early detection, and practicing breast self-examination.

Conclusion: The moderate awareness levels observed among female students, coupled with significant deficiencies in key areas of breast cancer detection knowledge. There was a significant correlation between type of college and students' awareness. Establish seminars and training courses concerning breast cancer and its early detection at Kerbala university, Add Educational program to educate students about new screening procedure and its importance for breast cancer screening.

Keywords: Awareness; Pre-Graduating Students; Breast Cancer; Early Detection.

■ Paper 30:

The Necessity of Specialization in Nursing Education and Practice: A Path toward Advanced and Patient-Centered Care

Prof. Rabea Mohsen Ali

Dr. Hashim Hamid Shabeeb

Yousef Asdooala Jamshid

*** Prof. Mohammad Farzollah Abbasi

(Article presenter)

Email: Mohamad_abbasi55@yahoo.com

Department of Adult Nursing, College of Nursing, University of Kut, Wasit, 52001, Iraq

Abstract:

As healthcare systems become increasingly complex, the demand for specialized nursing roles has grown exponentially. This paper explores the urgent need to develop specialized education and practice tracks within the nursing profession. Specialization enhances clinical expertise, improves patient outcomes, and prepares nurses to meet specific population health needs. This review emphasizes the importance of integrating specialized curricula in nursing education and fostering advanced practice roles in clinical settings.

Keywords: Nursing specialization, advanced practice, nursing education, clinical roles, patient-centered care, healthcare innovation

■ Paper 31:**Exploring Nicotine Dependence and Smoking Patterns Among University Students: A Cross-Sectional Analysis Exploring Nicotine Dependence and Smoking Patterns Among University Students: A Cross-Sectional Analysis**

Authors' names:

1. Younes K. Attia (MD).

Affiliation: Nursing/ Community Health Nursing, Department of Clinical Nursing Sciences, College of Nursing, Ninevah University, Mosul, Iraq

Email Address: younes.khalaf@uoninevah.edu.iq

Mobile phone number: 009647703306767

ORCID: <https://orcid.org/0009-0001-6464-488X>

Correspondence author

1. Younes K. Attia (MD).

Postal address: 41002

Email Address: younes.khalaf@uoninevah.edu.iq

Mobile phone number: 009647703306767

Abstract:

Background: Smoking among college students in post-conflict regions of the world, including Ninevah, Iraq is a topical but under-investigated health issue. This paper aimed at filling that gap by analyzing the key determinants of smoking behavior and evaluating nicotine and behavioral dependence in students.

Methods: A cross-sectional survey was used on 254 undergraduate students in four colleges of Ninevah University. The data were obtained through a self-administered questionnaire that contained the Fagerstrom Test, the main task of which is to determine the smoking habits of students, their demographic data, and dependence. To investigate important differences and relationships, statistical analyses were conducted.

Results: Findings revealed that majority of student smokers had moderate nicotine (72.7) and behavioral (65.4) dependence. The level of dependence also differed depending on the group: male students were more nicotine-dependent than female students ($p < .001$), and cigarette smokers exhibited higher dependence levels compared to water pipes or e-cigarettes users ($p < .001$). Moreover, dependence level was more dependent on the length of smoking and worse in those who started smoking at an earlier age.

Conclusion: Smoking in Ninevah University is a serious and complex issue that is dependent on gender, style of smoking, and history of smoking. The results also demonstrate the necessity of focused, gender-responsive cessation initiatives and measures aimed at cessation that surpass the general awareness efforts in order to safeguard a generation that is paramount to the recovery of the region and its future health.

Keywords

Smoking, Nicotine Dependence, University Students, Tobacco Use, Public Health, Iraq, Cross-Sectional Study

■ Paper 32:

Nonpharmacological Pain Management after Cardiac Surgery: A systematic scoping Review

¹Murtadha Kudhair Al- Turfi ²Mohammed Baqer Al-Jubouri, PhD;

¹ **Corresponding Author:** University of Baghdad / College of Nursing, Bab Al Muadham, Baghdad, Iraq, Postal Code: 10047, Phone: 009647709966237, Email: mortada.khodair1202a@conursing.uobaghdad.edu.iq

² University of Baghdad, Iraq, Email: maaljubouri@conursing.uobaghdad.edu.iq

Abstract:

Background: Cardiovascular disease (CVD) is quickly developing and has become a serious health concern globally. Cardiac surgeries are typically conducted via median sternotomy, which correlates with significant pain and challenging recovery in the postoperative phase and Several factors contribute to postoperative pain after cardiac surgery.

Objective: to identify the application of non pharmacological intervention to reduce postoperative pain severity after cardiac surgery.

Methods: A systematic scoping review was performed through a comprehensive literature search across various electronic databases, including PubMed, Medline, CINAHL, Science Direct, Google Scholar, Scopus, and the Cochrane Library. The search strategy utilized multiple combinations of Medical Subject Headings (MeSH) terms.

result: the selection of 172 studies for further evaluation. 78 papers were excluded due to the unavailability of full text, single study group (n = 39), and non-compliance with participant criteria (n = 23). Consequently, the final analysis included 32 papers

Conclusion: The use of non-pharmacological techniques as additional treatment in the post-cardiac surgery period represents an interesting intervention. To reduce pain Evidence indicates that nonpharmacological techniques play a significant role in treatment. Further investigation is necessary to enhancing the evidence.

This study addresses the gap in evidence regarding nonpharmacological pain management after cardiac surgery. While previous research has explored various methods, a comprehensive review was needed to clarify their effectiveness.

This study identifies and categorizes the most effective nonpharmacological intervention, offering insights that could inform clinical practices.

The findings suggest an area for future research to optimize pain management strategies in cardiac surgeries.

■ Paper 33:

Knowledge, Attitude and Practices About Needle-Stick Incidents Among Nurses in Mosul City

Karam Yaseen Fathi ¹, Younes K. Attia ², Atheer Abd Ahmed ³

Ahmed Shaker Alabassi ⁴, Rayn Suliman Dawood ⁵

2(Department of Clinical Nursing Sciences, College of Nursing/Ninevah University, Mosul/Iraq)

3 (Department of Clinical Nursing Sciences, College of Nursing/University of Mosul/Mosul/Iraq)

4 (Department of Clinical Nursing Sciences, Nineveh Health Department, Mosul, Iraq)

5 (Department of Clinical Nursing Sciences, Nineveh Health Department, Mosul, Iraq)

Corresponding author: karamy749@gmail.com

Abstract:

Background: A needle stick injury is an occupational health hazard that is very severe in health care. Workers in the health care are exposed to blood borne illnesses and the psychological impacts of these injuries. The research questions seek to examine needle-stick among nurses working in Mosul City by examining their knowledge, attitudes, and practices in regard to such injuries. It aims to uncover loopholes which may be used to shape future plans on



workplace safety and well-being of nurses.

Methods: A quantitative study was conducted using descriptive, cross-sectional design to attain the objectives of the study and was carried out between the 1 st of October 2024 and the 15 th April, 2025. This study had a target population of 100 nurses in various hospitals within the Mosul city. The participants were chosen with the help of the intentional sampling technique where the participants were either directly exposed to the needlestick accidents or not.

Results: The sample population was 100 nurses (65% of the respondents were females and 75% were aged between 20-29 years). Many of them stated that they had over five years of experience (63%), yet 59% said they had not received their hepatitis B vaccination. It is also important to note that 70 per cent of them had a needlestick injury in the last year. Although the majority of nurses adhered to hospital policies on NSIs, half of them knew about post-exposure prophylaxis (PEP), and hand hygiene practices were uneven. The participants were also very concerned with the issue of NSIs, but misconduct during the procedures led to incidents.

Conclusion: Specific educational programs are essential to enhance the level of PEP and vaccination awareness. By strengthening the policies regarding the reporting of NSI and increasing the training regarding hygiene practices, a safer working environment will be promoted. Frequent observation and establishment of a culture that supports safety will also enhance compliance to best practices by the nursing staff.

Keywords: Needle-stick injuries, Knowledge, Attitude, Practices, Workplace, and Nurse.

■ Paper 34:

Nursing Evaluation of Nutritional Status Using the Subjective Global Assessment in Orphanage Children: A Nursing Perspective

Qasim Kadhim Ashour¹

Enas Ahmed abdel Karim ²

Assist. Lecturer. Pediatric Nursing Department, College of nursing, University of Kerbala, Iraq :email Qasim.k@uokerbala.edu.iq

Pediatric Nursing, College of Nursing, University of Al- Qadisiyah, Al-Diwaniyah, Iraq

Abstract:

Background: Pediatric is a crucial time that significantly affects a child's mental and physical growth. Orphanage children are particularly at risk for malnutrition, making them among the most vulnerable. When it comes to determining and meeting these kids' dietary needs, nursing is essential. When it comes to determining nutritional status and offering the assistance required to improve it, nurses are the first line of defense. Nurses can detect malnutrition symptoms and determine the best course of action by doing precise health and nutritional.

Aim of the study: To assess the nutrition status of children by using the Subjective Global Nutritional Assessment (SGNA) of Children in Orphanages in Karbala city.

Material and Methods: A cross-sectional descriptive method was utilized in this study. This study was carried out at orphanages in Karbala City. Two tools were used to measure the variables of the study included demographic information and the Subjective Global Nutritional Assessment.

Results: showed that 62.5% of children were 3-4 years old, the gender showed 55% of children were female. The results of study indicated that most of the study sample had 57.5% (mild), 25% (moderate), and 5% (severe) of children are malnourished. **Conclusion:** The majority of orphaned youngsters suffer from mild malnutrition. Age has a significant impact on the nutritional state of children in orphanages, suggesting that different age groups may require different food and care practices. This suggests a common issue influencing children's health. To guarantee that children in orphanages and communities at large receive enough nourishment, nutritional intervention programs are recommended.

Keywords: *Nursing Assessment, Subjective Global Assessment, Nutrition, Children, Orphanage.*

■ Paper 35:

Evaluation of Nursing Practice about Dressing Wound in Burn Center

Bashar R. Mohammed Ali, Ph.D., Ministry of Higher Education and Scientific Research, University of Kufa, Faculty of Nursing, Iraq, bashar.rasheed@uokufa.edu.iq

**Muntadher Salah Alnaffakh, Ph.D., Ministry of Higher Education and Scientific Research, University of Kufa, Faculty of Nursing, Iraq, muntadhar.salah@uokufa.edu.iq

***Haider Mohammed Al-Abedi, Ph.D., Ministry of Higher Education and Scientific Research, University of Kufa, Faculty of Nursing, Iraq, hayderm.alabadi@uokufa.edu.iq

**** Saher Ameen Gabbar, Ministry of Higher Education and Scientific Research, University of Kufa, Faculty of Nursing, Iraq sahera.almossawy@uokufa.edu.iq

Abstract:

Background: Wound dressing is one of the major nursing responsibilities. Aseptic technique is mandatory to minimize complications. Effective wound dressing promotes wound healing, leading to early discharge and saving costs. The study aims to evaluate nurses' practices about wound dressing. An Observational Design was carried out in Al-Najaf City/Al-Najaf Al-Ashraf Health Directorate / Specialized Burns, Plastic and Reconstructive Surgery Center and adopted in the current study to achieve the early objectives. The study started from January, 7, 2025-unit April, 17, 2025. A Non-Probability (Purposive Sample) of (50) nurses were including in the present study. Samples are collected from the burn center. Data collected through using of a well-designed questionnaire consists of two parts: part I consists of (7) items, which included age, sex, level of education, training session, number of trainings, years of employment and years of experience in burn center. Part II of the checklist represents best practices for infection control during wound dressing changes and to evaluate wound practices, observe wound care procedures from start to finish, marking whether practices. The present study's findings indicate that

the overall assessment of nurses' practice of wound dressing is good. In addition, there is a non-significant relationship between nurses, wound dressing practices and their socio-demographic data, except for the years of experience in burn center. The study concludes that most nurses' wound dressing practice is good. The study recommends to enhance environmental hygiene protocols by implement stringent cleaning and disinfection protocols for all surfaces and equipment in patient areas, including bed rails, door handles, and medical devices, to minimize contamination risks..

Keywords: Evaluation, Nurses, Practices, Wound dressing.

■ Paper 36:

Effect of Active and Passive Smoking upon Lung Capacities Among Adolescents in High Schools: comparative study

Ridha. M. Lefta / Ph.D – Prof / Community Health Nursing Department, College of Nursing, University of Al-Ameed, Ministry of Higher Education and Scientific Research, POBox 198 Iraq. Dr.Radha.M@alameed.edu.iq. . <https://orcid.org/0000-0002-2676-2455>.

Ali Alaa alhashmi/ Adults Health Nursing, College of Nursing, University of Al-Ameed, Karbala. ali_alhahsmi@alameed.edu.iq

Mohammed Khanjary /Adults Health Nursing, College of Nursing, University of Al-Ameed, Karbala. Mohammed.khanjary@alameed.edu.iq

Mohammad K Abdul-Jaleel.\ lecturer –Adult nursing -, College of Nursing, University of Al-Ameed

Ammar A. Allbraheny- pediatric nursing - College of Nursing, University of Al-Ameed

corresponding author: Ridha mohammad lefta -Prof- Ph.D .Community Health Nursing Department, College of Nursing, University of Al- Ameed, , Iraq. Dr.Radha.M@alameed.edu.iq

Abstract:

Background: The act of someone who is not the intended “active” smoker inhaling tobacco smoke, also known as secondhand smoke (SHS) or environ-



mental tobacco smoke (ETS), is known as passive smoking. It happens when tobacco smoke enters an area and is inhaled by those who are present in that area. Several of the same problems caused by direct smoking are also caused by passive smoking, such as lung cancer, cardiovascular ailments, and respiratory disorders.

Objectives: To investigate the influence of active and passive smoking among adolescents upon lung capacities.

Methods of the study: A quantitative study design comparative Study was Carried out in order to achieve the stated investigation of the influence of passive and active smoking on adolescents upon lung capacities through lung function test by spirometer. The study began from January 7, 2022 to June 16, 2022 in Karbala city

Results: the study results for demographic data among passive and active study subject indicate most of age is (18-19) within age groups of male and females. Also, the majority of the study sample for class are within sixth class and the majority for students for body mass index (BMI) are normal among passive and active smokers, also the parameters depict the clinical data for study sample that indicate the majority of the study sample does not have chronic diseases such as (hypertension, diabetes mellitus, and cardiovascular disease) among passive and active smoker, also depict that the study results about the ratio between forced expiratory volume at one second (FEV_1) and force vital capacity (FVC) that indicate the majority of the study sample are predict for respiratory disease among active rather than passive.

Conclusions: active smokers found to be predictable or susceptible for risk factors of respiratory disease according to indicator ($FEV_1 / FVC \%$) on the opposite side passive smokers are less susceptible for risk factors of respiratory disease.

Recommendation: Encourage clients to do breathing exercises and walk in an area with fresh air daily to improve lung capacity, provide programs that show and highlight the dangers of active and passive smoking, recommends that all physicians ask all their clients about tobacco and cigarettes use, and advise them to stop if they do.

Key word: active and passive smoking, lung function capacities, adolescents

■ Paper 37:

Maternal-Infant Bonding in the Postpartum Period

1. Asala Riyadh Mohammed

Lecturer. PhD. College of Nursing, University of Thi-Qar, Dhi Qar, Iraq

asala.riyadh@utq.edu.iq

<https://orcid.org/0009-0001-5927-4116>

2. Hussein F Kamil

Lecturer. PhD. College of Nursing, University of Basrah, Basrah, Iraq

hussain.fakher@uobasrah.edu.iq

3. Adil Ali Hussein

Assistant Professor. PhD. College of Nursing, University of Basrah, Basrah, Iraq

adil.hussein@uobasrah.edu.iq

<https://orcid.org/0000-0002-6869-5123>

Abstract:

Background: The bond between mother and infant in the postnatal period is considered to be a key predictor of emotional, cognitive and social development in children. Perturbations of this process can lead to bonding disorders that persist in the long term for both mother and child.

Aim: To determine the degree of maternal-infant bonding in postpartum mothers in Iraq, to investigate associations between bonding with some selected demographics such as age, education, economic status and order of birth.

Method: A cross-sectional descriptive study was carried out at Bint Al-Huda Teaching Hospital in Al-Nasiriyah, Iraq, from January to February, 2025. A purposive sample of 108 postpartum women were included, and administered an Arabic-translated Postpartum Bonding Questionnaire (PBQ). The data were analyzed by SPSS 20 according to descriptive and inferential statistics.

Results: The results found that 88% of mothers displayed high levels of bonding, while 12% were moderately bonded. No mothers were identified as



having low bonding. Bonding levels were statistically significantly associated with both maternal age ($p = 0.008$) and child birth order ($p = 0.002$), while there were no significant relationships found with education, income, or residence.

Conclusion: Overall bonding was satisfactory, but some mothers had emotional indicators for psychological stress. These results suggest the need for early screening, psychosocial intervention, and culturally sensitive intervention in postpartum care in order to allow healthy mother-infant relationships and prevention of potential bonding disorders.

Key Words: Maternity, Infant Bonding, Postpartum, Pediatric, Nursing.



————— Fourth Theme —————

**RECENT ADVANCES IN ORAL
AND MAXILLOFACIAL SURGERY
AND DENTAL PROSTHETICS**

■ Paper 1:

Chronicles of facial cleft no. 0, no. 7 and 11 and their surgical management: Case Report

1 Ahmed maki merza, 2Haydar Munir Salih, 3Nawal Farooq Abdulqader

1Maxillofacial Surgeon, Department of Maxillofacial, Alkarkh General Hospital, Baghdad, Iraq.

2*Assistant professor in Maxillofacial Surgery, College of Dentistry, Gilgamesh University, Iraq.

3 Maxillofacial Resident, Department of Maxillofacial, Alkarkh General Hospital, Baghdad, Iraq.

Abstract:

Background: Paul Tessier described number based classification depending on the location of a cleft in relation to the median facial line, for rare craniofacial clefts. He ascribed numbers from 0 to 14 to the defects. The aim of this case study is to present rare facial cleft 0,7 and the steps of surgical management in our hospital setting.

Case report: A 14 days of age patient attended to our clinic, experiencing facial cleft no.0, no.7 and no. 11. Management started by construction of feeding plate first, to improve child's breathing and feeding. At the age of 3 months, reconstruction of oral sphincter was done. At the age of 1 year, the wide cleft palate was repaired with palatoplasty. Till now dramatic changes has already done and waiting for more the collective results

Discussion:As there is many documented cases report the combination of facial clefts, it's unlikely to witness a combination of three craniofacial clefts (no.0, no.7 and n.11) in addition to palatal cleft, all in single patient.

Keyword: cleft no. 0, cleft no. 11, holoprosencephaly, macrostomia.

■ Paper 2:

A characteristic signature of insulin-like growth factor (IGF) axis expression during osteogenic differentiation of human dental pulp cells (hDPCs): Potential co-ordinated regulation of IGF action

Hasanain Al-Khafaji a, Pernille R. Noer d, Hanna Alkharobib, Aishah Alhodia, Josephine Meadea, Reem El-Gendya, c, Claus Oxvigd, James Beattiea,*

a Division of Oral Biology, Leeds School of Dentistry, Level 7 Wellcome Trust Brenner Building, University of Leeds, St James University Hospital, Leeds, United Kingdom

b Department of Oral Biology, Dental College, King AbdulAziz University, Jeddah, Saudi Arabia

c Department of Oral Pathology, Faculty of Dentistry, Suez Canal University, Ismailia, Egypt

d Department of Molecular Biology and Genetics, Aarhus University, Gustav Wieds Vej 10C, 8000 Aarhus C, Denmark

Abstract:

The IGF axis is represented by two growth factors (IGF1 and IGF2), two cognate cell surface receptors (IGF1R and IGF2R), six soluble high affinity IGF binding proteins (IGFBP1-6) and several IGFBP proteases. IGF1 and IGF2 are present at high concentrations in bone and play a crucial role in the maintenance and differentiation of both foetal and adult skeleton. In order to understand the role of the IGF axis in bone and other tissues it is necessary to profile the expression and activity of all genes in the axis together with the activity of relevant ancillary proteins (including IGFBP proteases). In the current report we used differentiating human dental pulp cells (hDPC) to examine the expression and activity of the IGF axis during osteogenic differentiation of these cells. We found that, with the exception of IGF1 and IGFBP1, all components of the IGF axis are expressed in hDPCs. IGFBP-4 is the most abundantly expressed IGFBP species at both mRNA and protein levels under both basal and osteogenic conditions. Although we found no difference in IGFBP-4 expression under osteogenic conditions, we report increased expression and activity of pregnancy associated plasma protein-A (PAPP-A- an IGFBP-4 proteinase) leading to increased IGFBP-4 proteolysis in differentiating cell cultures. Fur-



ther to this we report increased expression of IGF-2 (an activator of PAPP-A), and decreased expression of stanniocalcin-2 (STC2- a recently discovered inhibitor of PAPP-A) under osteogenic conditions. We also demonstrate that STC2 and PAPP-A are able to form complexes in hDPC conditioned medium indicating the potential for regulation of IGFBP-4 proteolysis through this mechanism. We suggest that these changes in the expression and activity of the IGF axis may represent part of an osteogenic signature characteristic of differentiating hDPCs

■ Paper 3:

Solution for Atrophied Maxilla with Custom Made Additive Manufactured Subperiosteal Implant: Case Report

1 Haydar Munir Salih, 2 Ahmed A. Hammad

1 Assist. Prof. in Maxillofacial surgery, College of Dentistry, Gilgamesh university, Baghdad, Iraq.

2 Senior Lecturer in Maxillofacial surgery

Abstract:

Implant dentistry has shown great evolution in the treatment of partially and completely edentulous patients, as it offers a significant functional and biological priority over conventional fixed and removable prostheses. Digital work expands dental abilities and addresses individual needs, especially in atrophied ridge dental implant rehabilitation. Additive manufacturing has taken great developmental steps in recent years and has sparked interest in three-dimensional titanium subperiosteal implants. This manuscript presents the clinical application of patient-customized, mad additive-manufactured subperiosteal implants for immediate rehabilitation of edentulous atrophic maxilla. patient 37 yr. male complain with an atrophied maxilla and a history of failure of traditional dental implant fixed prosthesis was treated after digital scan and 0.6 mm slice CT scan stereolithographic model was made. Subperiosteal titanium grade 5 custom was fabricated for him by additive manufacturing after surgery, and 3 months of PMMA temporary prosthesis final prosthesis was done, and 1 year there were no biological or mechanical complications. The

custom made subperiosteal implant could be alternative solution for rehabilitation of atrophied jaw

■ Paper 4:

Analysis of Salivary Phosphorus and Calcium in Periodontal Health and Disease: A Comparative Study.

Bahaa Noor Madhlom (1), Kamal Sahib Mizal (2)

(1), Oral Medicine, Faculty of Medicine, Jabir Ibn Hayyan University for Medical and Pharmaceutical Sciences, Al Najaf, Iraq

(2) Oral Surgery, University of AL-Ameed. collage of dentistry, Department of oral and maxillofacial surgery, Karbala, Iraq.

Abstract:

Background: Dental calculus is a solidified accumulation that forms when dental plaque initiates calcification. A substance mostly consisting of calcium phosphate mineral salts that deposits on healthy teeth. A non-mineralized plaque layer encases restorations. Dental calculus significantly exacerbates periodontal disease, which is directly linked to its distribution pattern of supragingival calculus in saliva. Bacteria rapidly absorb phosphorus in saliva, leading to the development of dental calculus from plaques.

Objective: To assess and compare the amounts of calcium and phosphorus in the saliva of periodontally healthy people and those with periodontitis.

Method: There were 90 participants in the study, ranging in age from 20 to 61. Half of the participants had periodontitis, while the other half did not. There has been documentation of the depth of the probing pocket and the level of clinical attachment. Collecting saliva for biochemical analysis. Utilizing a colorimetric technique, the concentrations of inorganic calcium and phosphorus were evaluated. **Results:** There was a statistically significant rise in the concentrations of inorganic phosphate and calcium in the saliva of individuals with periodontitis as compared to the control group.

Conclusion: Individuals with elevated levels of inorganic calcium and phosphorus in their saliva face an increased risk of developing periodontitis.

Keyword: Saliva, Periodontitis, Salivary Calcium, Salivary Phosphorus.

■ Paper 5:

Evaluation of the effect of platelet rich fibrin and low level laser therapy (LLLT) on treatment of alveolar osteitis (comparative clinical study)

Kamal Sahib Mizal^{1,3}, Asma Ben Cheikh², Muntathar Muhsen Abusanna³, Eya Moussaoui⁴

¹ oral and maxillofacial surgery, Faculty of dentistry .AL-Ameed University

²Associate Professor in Preventive and Community Medicine, Prevention and Security of Care Department, Sahoul university hospital, Sousse Faculty of Medicine of Sousse, University of Sousse

³ B.D.S C.A.B.M.S OMFS University of Al-Ameed /collage of dentistry

⁴ Department of dental medecine, SAHLOUL Hospital (Sousse), University of Monastir, Sousse, Tunisia. Research Laboratory: LR 12SP10: Functional and Aesthetic Rehabilitation of Maxillary, Tunisia

Abstract:

A dry socket is a frequent observed problem that occurs during the process of wound healing after a tooth extraction. The cause of this condition is not well understood, and it often occurs in individuals who are in good health. Consequently, the management techniques for dry socket have consistently been based on practical experience rather than on scientific theory.

The objective of this study is to examine the effectiveness of platelets rich fibrin (PRF) and low-level laser therapy (LLLT) for the treatment of dry socket, and compare to conventional treatment.

Material and Methods

A randomized controlled clinical trial was conducted among patient with a dry socket, were categorized into three treatment groups. In the first group, the conventional treatment was used with performing gentle socket curettage and saline irrigation. The second group, was treated with platelet-rich fibrin (PRF), whereas third group, underwent low-level laser therapy (LLLT). Initially, the dry socket patients were examined at day 0 and achieved one of three treatment options then scheduled follow-up appointments on days 4, 7 after therapy. The pain score, inflammation and tenderness around the socket,

and quantity of granulation tissue formation were assessed respectively.

Results

In total, eighty-seven patients with a dry socket, were included into three treatment groups. The conventional therapy group required more than 7 days to reach the same healing phase as the group II with PRF treated socket and group III with LLLT irradiation socket. When comparing the healing rates among PRF and LLLT, it was observed that the LLLT treated the group III patients experienced a 4-day exceed in both granulation tissue production and pain management compared to the PRF treated the group II patients.

CONCLUSION

The sockets treated with PRF and low level laser therapy shown statistically significant improvement in healing process and granulation tissue formation compare with conventional treatment.

Keyword: ► dry socket ► depth of the socket ► low-level laser therapy ► platelet rich fibrin

■ Paper 6:

A Comparative Evaluation of Marginal Microleakage in Direct and Indirect Veneers Restored with Different Materials (In Vitro study)

Fadi A. Al Quesbi¹, Haider H. Jasim², Waleed Alghurabi¹, Ahmed Alhelal^{1,3}

¹Department of conservative dentistry, College of Dentistry, University of Al-Ameed, Karbala, Iraq

² Department of conservative dentistry, College of Dentistry, University of Al Mustansiriya, Baghdad, Iraq

³ Department of conservative dentistry, College of Dentistry, University of Babylon, Babylon, Iraq

Abstract:

The aesthetic element of the teeth plays a crucial importance in the modern dental care practice. More precisely, a bad looking anterior tooth may dras-



tically demolish the patient's self-confidence and becomes a source of embarrassment and major concerns. Unsightly staining at the edges, increased sensitivity, and ultimately lead to the breakdown of the seal between the tooth and the material

Method: s: and materials Forty-five freshly extracted (for orthodontic purposes) human maxillary premolar teeth were collected, taking care to ensure that the chosen samples have comparable measurements, crack-free (conducted utilizing a magnification clinical loup and light trans-illumination, fully-grown and caries-free) Grouping: The specimens were arbitrarily distributed into 3 test groups (n=15): Gp A: Direct-veneers using a nanocomposite material (3M™ Filtek™ Z350XT, USA). Gp B: Direct-veneers utilizing a flowable restorative material (GC G-aenial® Universal Flo, Japan). Gp C: IPS-e Veneers fabricated indirectly from highly esthetic lithium-disilicate glass-ceramic (LS2) CAD/CAM blocks (Ivoclar; Vivadent; Germany). Microleakage Test

Results

Among the three groups: Group C (IPS e.max CAD veneers) exhibited the lowest mean microleakage percentage (6.50%), followed by Group B (flowable composite veneers) with a mean value of 10.46%, while Group A (nanocomposite veneers) showed the highest mean microleakage percentage (22.76%). A significant difference of microleakage values was observed employing one-way ANOVA test at sensitivity of ($p < 0.05$).

Conclusion: , the current study offers some important insights into the marginal fit of some clinically used dental materials. The findings propose that the selection of material, together with manufacturing and bonding procedures, plays a pivotal importance in determining the microleakage outcome. The results emphasize the significance of utilizing materials with recommended characteristics, particularly in areas where marginal adaptation is crucial for sustained clinical achievement.

■ Paper 7:

Literature Review

Clinical Decision-Making in Occlusal Adjustment: Integrating Articulating Paper and Emerging Digital Technologies

Hashim Kadhim¹, Mohammed Hussein M. Alsharbaty¹, Sadeq Aadi Rahi²

1 Branch of Prosthodontics, College of Dentistry, University of Al-Ameed, Karbala, Iraq.

2 College of Dentistry, Al-Mustaqbal University, Babylon,, Iraq

Abstract:

Occlusal adjustment plays a vital role in restorative, prosthodontic, and implant dentistry, as it influences patient comfort, prosthesis survival, and long-term functional stability. Traditionally, articulating paper has been the standard tool for detecting occlusal contacts. However, its use is limited by the lack of quantitative information regarding force distribution and timing. In recent years, digital occlusal analysis systems, including T-Scan, OccluSense, and intraoral scanner-based mapping, have been introduced to overcome these shortcomings. These technologies generate objective and reproducible measurements, offering valuable support to conventional techniques. This review highlights the clinical applications of articulating paper, summarizes validation studies on digital occlusal tools, and provides practical recommendations for interpreting occlusion in natural dentition, implant restorations, and patients with temporomandibular disorders (TMDs). Comparative tables, decision-making strategies, and recent evidence from recent studies are integrated to assist clinicians in selecting the most suitable diagnostic approach based on the individual needs of their patients and the restorative scenario.

Keyword:Occlusion, articulating paper, T-Scan, OccluSense, intraoral scanners, implants, TMD, occlusal adjustment

■ Paper 8:

Evaluation of the effect of local application of angiotensin 1 on tooth development an in vivo histological study in neonatal rats

Al-Hussein Ali Mohammed Hussein^{1*}, Enas Fadhil Kadhim²

¹ College Of Dentistry, University Of Al-Ameed, kerbala, Iraq

² College Of Dentistry, University Of Baghdad, Baghdad, Iraq

Abstract:

Background:The aim of the present histology study was to determine if local angiotensin 1 therapy on tooth formation in the superior molar area of new-born 16-day old rats. **Materials and Methods:** Twelve new-born neonatal rats (N=12), weighing 3.5-4 g, were employed during this research. They were housed in a room with a controlled temperature and access to food and water. The animals in the control group (n=6) received saline, while the animals in the experimental group (n=6) received 10 μ L of angiotensin 1 at concentration of 0.03mg/ml in deionized water in the upper right molar region intraosseous. On the sixteenth day, the animals were sacrificed. **Findings:** In all six samples in the experimental group, local administration of the angiotensin 1 protein noticeably accelerated the tooth-development process. Comparing the experimental group to the control group, the thickness of the dentin and enamel increased, and the number of odontoblasts, fibroblasts, and blood vessels increased, indicating early tooth tissue deposition. Statistically, highly significant differences were observed in all variables between the two groups ($p<0.05$). **Conclusions:** Local application of angiotensin 1 accelerated tooth development compared with the control group.

Keyword:tooth development, angiotensin 1, angiogenesis, VEGF, Enamel organ.

■ Paper 9:

Evaluation of the reinforcement potential of EverX Posterior and Filtek One bulk-fill composites in weakened endodontically treated roots

Buraq A. Al-Muttairi¹ , Firas S. Al-Baaj²

² Department of Conservative Dentistry, College of Dentistry, Mustansiriyah University, Baghdad, Iraq,

Abstract:

Background: The chemical and physical characteristics of fiber-reinforced composites such as EverX-Posterior (GC, Tokyo, Japan) might strengthen compromised dental roots. This study evaluated the reinforcement potential of EverX-Poster fiber-reinforced composite versus Filtek-One (3M, Minnesota, USA) nanocomposite in coronally weakened roots, considering the fracture resistance and flexural strength.

Method: s: and **Materials:** In this In vitro study, forty-five human mandibular single-rooted, single-canal premolars were used. The teeth were decoronated to achieve a standard root length (14 mm). The Race-Evo rotary file system with NaOCl irrigation was used for canal preparation up to size 30/0.06. All canals were obturated using single-cone gutta-percha and AH Plus sealer (Dentsply Sirona, Germany). The inner dentine wall was weakened at the coronal 3mm, preserving 1.5 ± 0.2 mm of the surrounding wall. The specimens (n=15) were assigned: to the Filtek-One-reinforced, EverX-Posterior-reinforced, and Control (no reinforcement) groups. Fracture resistance testing was subsequently performed. Samples for Flexural strength testing were constructed per ISO standardization. **Results:** The EverX-Posterior group showed the highest fracture resistance (1.41 ± 0.11 kN) and flexural strength (66.33 ± 6.34 MPa), followed by the 3M group (1.14 ± 0.12 kN; 32.80 ± 6.59 MPa), whereas the control group exhibited the lowest fracture resistance values (0.50 ± 0.12 kN), p-value >0.001.

Conclusion: s: EverX-Posterior and Filtek-One bulk-fill composites reinforce coronally weakened endodontically treated teeth, with EverX-Posterior showing higher fracture resistance and flexural strength under laboratory conditions. **Key-words:** Fiber-reinforced composite; Flexural strength; Fracture resistance; nanocomposite.

■ Paper 10:

Digital Technologies and Artificial Intelligence in Maxillofacial Surgery and Dental Prosthetics: An Analytical Literature Review

Maryam Fouad Al-Mousawi 1

1 Department of Dentistry, Al-Kafeel University

Abstract:

The field of maxillofacial surgery and dental prostheses has undergone a revolution due to the confluence of digital technology and artificial intelligence (AI), which has brought about unparalleled precision in diagnosis, surgical planning, procedure execution, and treatment delivery. In addition to changing clinical procedures, these technological developments have also changed the field's frameworks for education and training.

The advantages and drawbacks of incorporating AI, 3D printing, and computer-aided design/manufacturing (CAD/CAM) technologies into workflows for maxillofacial surgery and prosthetics are critically examined in this analytical literature analysis. Peer-reviewed research published from 2018 to 2025 was thoroughly reviewed utilizing sources like Google Scholar, PubMed, and Scopus. The quantifiable effects of computer-guided fabrication technologies, AI-assisted diagnostic tools, and digital imaging on surgical accuracy, workflow effectiveness, and patient outcomes were the main focus of the analysis.

Results show that integrating AI and digital processes greatly increases the accuracy of surgical planning, reduces intraoperative deviations, and enhances postoperative outcomes. In maxillofacial pathology, AI-driven radiography analysis significantly improves diagnostic reliability, and CAD/CAM and 3D printing technologies maximize prosthetic design and production, cutting costs and procedure time. High implementation costs, the requirement for standardized clinical training, ethical and legal considerations, and technical interoperability problems are still major obstacles, nevertheless.

In conclusion, a revolutionary paradigm in maxillofacial and prosthetic practice is represented by the cooperative use of AI, 3D printing, and CAD/CAM technology. Better educational opportunities, cost-effective workflows, and improved healthcare results are all provided by this combination. Future studies should focus on creating standardized procedures, addressing ethical and financial obstacles, and encouraging the long-term, worldwide adoption of

digital breakthroughs in the fields of surgery and prosthetics.

Keyword: :Maxillofacial surgery; Dental prosthetics; Digital technologies; Artificial intelligence; CAD/CAM; 3D printing.

■ Paper 11:

Evaluation the shear bond strength of polyether-ether ketone PEEK reinforced by Cristobalite as orthodontic fixed retainer. (An in vitro study)

Fatima M. Jawad 1, Wael A. Jabaar 2 Fakri A. Al- Fatlawi 3.

1College of Health and Medical Techniques , Middle Technical university, Baghdad, Iraq.

2College of Health and Medical Techniques, Middle Technical university, Baghdad, Iraq.

3AlFarabi University ,Baghdad, Iraq

Abstract:

Objective: s: The objective of the study is to evaluate the shear bond strength of PEEK following the addition of various concentration of cristobalite used as orthodontic fixed retainer. **Material and methods** Retainer wires with 15mm segments were utilized ,and PEEK wires were made into cylindrical shapes with diameter of 1mm. they were then manufactured and divided into three groups of ten each group. Group 1 consist of pure PEEK as a control, Group 2 of PEEK reinforced with 1% cristobalite, and Group 3 of 2% cristobalite. They were attached to the lingual surface of premolar teeth using the 3M Transbond TM System and single Bond Universal after being treated for one minute with 98% sulfuric acid. Every sample was tested for SBS using Instron universal testing equipment. The Statistical Package for Social Science (SPSS) and one-way analysis of variance (ANOVA) were used to statistically nanlyze the gathered data and assess any significant differences between the groups.

Results: results indicated that the addition of cristobalite significantly increased the shear bond strength. The group with highest SBS (2% cristobalite

) was Group 3, followed by Group 2 (1% cristobalite), while the control group displayed lowest values .

Conclusion:The incorporation of cristobalite into the PEEK matrix improves its shear bond strength, with a higher cristobalite content yielding better mechanical performance.

Keyword:polyether-ether ketone(PEEK) , cristobalite , fixed orthodontic retainer , shear bond strength.

■ Paper 12:

Effects of different curing distances on the microflexural strength of nanohybrid and giomer composite resins

Waleed alghurabi 1,Daneshpooy M. 2,Dabaghi-Tabriz F.2,Amir-Ahmad Ajami2,

Mahdi Abed-Kahnamouei 2

1Department of Operative Dentistry, College of Dentistry, University of Al-Ameed, Karbala, Iraq

2Department of Operative Dentistry, Faculty of Dentistry, Tabriz University of Medical Sciences, Tabriz, Iran

Abstract:

Background:Light-cured composite resins are favored for their esthetics. However, polymerization can be affected by various factors, influencing restoration longevity.

Objective: s: This study investigated the impact of different curing distances on the flexural strength of nanohybrid and giomer composites. Materials and

Methods: Filtek™ Z250 XT (nanohybrid) and Beautifil (giomer) composites were used. Sixty rectangular specimens (6×2×1 mm) were prepared and cured at distances of 0, 2, and 8 mm per manufacturers' instructions. Samples were stored in deionized water at 37°C for 24 hours. Microflexural strength was tested using a universal testing machine (1 mm/min). Data were analyzed with SPSS 17; significance was set at P < 0.05.

Results: The highest flexural strength was at 0 mm curing distance. Two-way ANOVA revealed significant differences in microflexural strength across distances ($P=1.925$). Strength at 0 mm was significantly higher than at 2 and 8 mm, with no significant difference between the latter two. Z250 showed significantly higher strength than Shufo composite under all conditions.

Conclusion: Increasing curing distance reduced microflexural strength in both composites. Z250 exhibited superior strength compared to Shufo at all distances.

Keyword: Composite resin, Giomer, Light-curing, Microflexural strength

■ Paper 13:

Prevalence of dental caries among cigarette smoker cases attending dental clinics

Dheyaa R Alhajjar¹

¹Oral Diagnosis Department, College of Dentistry, Al-Ameed university

Abstract:

Regarding the association between the smoking and dental caries prevalence, there are multiple variable factors which can contribute directly or in another way to the increase in the prevalence of dental caries in smokers similar as the patient age, tobacco habits other than smoking, oral hygiene, drinking habits, eating habits, dental recalls and overall health. Due to that, it's delicate to conclude the correlation between a single positive factor which can causes increase in caries prevalence in smokers but the association between smoking and dental caries is well proved in aged patient groups. Aims. this study aimed to assess the frequency of dental caries and its associated factors among cigarette smoker cases attending dental clinics in Al- Ameed university, college of dentistry, 2025. Material and methods. In this study a total of 125 participants were examined, including 77 males and 48 females, ranging in age from 18 to 65 years, the number of smoker patient was 55 and 70 of the study sample were non-smokers. Demographic data, smoking status, and Dental caries assessment using the DMFT index for all permanent teeth, excluding wisdom teeth by a non-invasive clinical dental examination were determined for

each participant. Results. the results found that level of DMFT in females (8.96 ± 3.90) is higher than males (7.87 ± 3.10), but not significantly. There are no-significant differences between smokers and non-smokers regarding level of DMFT (P . value=0.432). The results found that level of DMFT in those who belonging to older age 56-65 years have higher significantly level of DMFT (14.33 ± 3.14) compared to other age groups (P - value<0.001). The participants who freelance work have higher significantly level of DMFT (9.71 ± 3.26) compared to other occupations (P - value<0.001). Patients had both hypertension and diabetes have higher significantly level of DMFT (11.17 ± 4.17) than hypertension and those had no medical history at significantly less than 0.001. Conclusions. There are limitations to this cross-sectional study. The results of which cannot establish a direct effect of cigarette smoking on the prevalence of dental caries. As such, we conclude the need for a more robust study design to ascertain whether smoking could potentially lead to increase the severity dental caries. A prospective cohort study could be a proper option.

Keyword:smoking, DMFT score, smoker, non-smoker .

■ Paper 14:

Impact of Conventional Removable Dentures on Oral Health-Related Quality of Life in Partially and Completely Edentulous Patients Treated by Dental Students in Karbala, Iraq

Farah Sadik 1, Hawraa Abbas 2 , Hashim Kadhim 3 , Mohammed Hussein M. Alsharbaty 4

1 Ministry of Health, Karbala Health Directorate , Al- Hur Al- Riahi Specialized dental center

2 Ministry of Health, Babil Health Directorate , Al-Musayyib Specialized Dental Center

3 Branch of Prosthodontics, College of Dentistry, University of Al-Ameed, Karbala, Iraq

4 Branch of Prosthodontics, College of Dentistry, University of Al-Ameed, Karbala, Iraq

Abstract:

Objective: To evaluate changes in oral health-related quality of life (OHRQoL) among partially and completely edentulous patients treated with conventional removable dentures fabricated by undergraduate dental students at the University of Al-Ameed, Karbala, Iraq.

Methods: Sixty patients were assessed using a validated questionnaire adapted from the OHIP-EDENT before and eight weeks after receiving dentures. The survey covered functional, psychological, and social domains. Data were analyzed using paired t-tests.

Results:

Significant improvements were observed in all OHRQoL domains post-treatment, with the greatest gains in functional limitation and psychological discomfort. Subgroup analysis revealed similar benefits for both partial and complete denture wearers, regardless of age, sex, or comorbidities.

Conclusion: Student-fabricated removable dentures significantly improved OHRQoL, supporting their clinical effectiveness and educational value.

■ Paper 15:**The Artificial Intelligence And Deep learning In Digital Dental Practice: A literature Review**

Farah M. Alkhafaji¹ ,Hawraa Khudeir² ,Fatin Monthir³ ,Mohammed Adnan⁴

¹ Electrical Engineering Technical College, Middle Technical University, Baghdad, Iraq

² Laser and Optoelectronics Engineering, University of Technology, Baghdad, Iraq

^{3,4} College of Dentistry, University of Babylon, Babil, Iraq

Abstract:

Dental informatics is a burgeoning field in the recent healthcare industry. Getting information and useful data from composite, multidimensional, and various sources is one of the biggest barriers to the transformation of the health

care system. The latest advancement in the technology of deep learning (DL) present new, efficient algorithms for creating a novel computational systems for complicated data. Furthermore, contribution of artificial intelligence (AI) is valuable and promising in the recent accomplished medical studies in health care improvement through .. Corresponding, the main highlighted advantages of AI in dentistry are: early disease detection, accuracy improvement, cost effective, minimize the gap in healthcare between rural and urban, and valuable role during COVID pandemic. While, ethical and legal issues ,patients privacy, application requirement, and community awareness and confidence considering the main challenges. Therefore, the current study objective is to review the most recent studies on the application of DL techniques to issues in dental informatics and make ideas for the complete, insightful development that may be useful to the healthcare sector. Furthermore, there is a focusing on several shortcomings, emphasize the bad need for enhanced, developed technique which offer new viewpoints on this fascinating advancement in the health care industry.

Keyword:deep learning; artificial intelligence; dental informatics; health informatics; dental practice; dental diagnosis;

■ Paper 16:

Salivary Biochemical Parameters and *clfA* Gene Association with Biofilm Formation of *Staphylococcus aureus* in Periodontitis and Dental Caries Patients in Thi-Qar Province, Iraq

1 Adnan abed azeez alazraqi, 2 Zaman Kareem Hanan , 3 Nabra F.Salih , 4Aliaa Kareem Hanan , Duaa Mahdi Mohammed ,Hiba Shaheed Juber

1,3 Collage of dentistry – University of Thi-Qar. Iraq

2 Collage of medicine – University of Thi-Qar. Iraq

4 Collage of Agriculture and Marshes, University of Thi-Qar, Iraq

Abstract:

Background:Staphylococcus aureus is an opportunistic pathogen implicated in oral infections such as periodontitis and dental caries. Its biofilm-form-

ing ability, mediated by genes such as *clfA*, enhances persistence and antibiotic resistance. Altered salivary biochemical parameters may further facilitate biofilm formation.

Method: A total of 100 dental swab and saliva samples were collected from patients with oral infections in Thi-Qar Province. *S. aureus* isolates were identified using culture, biochemical tests, and PCR targeting 16S rRNA and *clfA* genes. Biofilm formation was assessed using the crystal violet microtiter assay with proper ODc calculation, replicates, and reference strains. Salivary biochemical parameters (pH, protein, calcium, phosphate, urea, glucose) were measured using commercial kits with calibration. Antibiotic susceptibility testing was performed by Kirby–Bauer disk diffusion according to CLSI 2023 guidelines, and MDR was defined as resistance to ≥ 3 antibiotic classes. Ethical approval (University of Thi-Qar, Approval no. UTQ-2023-12) and informed consent were obtained. **Results:** Seventy-five percent of patients were positive for *S. aureus* infection, with 100% confirmation by 16S rRNA PCR. The *clfA* gene was detected in the majority of isolates and was significantly associated with strong biofilm production ($\chi^2=12.5$, $p=0.001$). Biofilm-positive isolates correlated with decreased salivary pH (6.6 ± 0.2) and increased protein (190 ± 18 mg/dL), calcium, phosphate, and glucose. Nearly all isolates demonstrated multidrug resistance (99%), confirmed across a full antibiotic panel. Correlation analysis showed a significant association between *clfA* carriage and salivary protein/glucose elevation ($p<0.05$).

Conclusion: The *clfA* gene, combined with salivary biochemical alterations, enhances biofilm formation by *S. aureus* in periodontitis and dental caries patients. These findings highlight the importance of considering salivary markers and genetic factors in oral infection management.

Keyword: Biochemical parameters , Biofilm formation , Staphylococcus aureus , *clfA* gene .

■ Paper 17:

Burnout among Tunisian Postgraduate Dental Students

Sinda Yacoub 1,2 , Sarra Nasri 1,3 , Cyrine Atrous 1 , Mehdi Khemiss 1,2

1Faculty of Dental Medicine, University of Monastir, Tunisia;

2Research Laboratory Réhabilitation fonctionnelle et esthétique des maxillaires, University of Monastir, Tunisia;

3Research Laboratory of Occlusodontics and Ceramic Prostheses, University of Monastir, Monastir, Tunisia.

Abstract:

Introduction. Burn out is a psychological syndrome emerging from chronic interpersonal stressors at work. The aim of this study was to determine the prevalence of burnout among postgraduate students in Dental Medicine in Tunisia and to identify associated risk factors.

Material and methods. This was a descriptive and cross-sectional study conducted at the faculty of Dental Medicine of Monastir (FDMM) between November 2024 and January 2025. All the postgraduate students, registered at the FDMM during the academic year 2024/2025, were included in this study. The validated French version of the Maslach Burnout Inventory (22 items) was distributed to participants to assess burnout levels across three distinct dimensions: Emotional Exhaustion (9 items), Depersonalization (8 items), and Personal Accomplishment (5 items).

Results. A total of 120 postgraduate students participated by fully completing the questionnaire. The results showed that 29.9% of participants met the criteria for burnout, with 50% reporting severe Emotional Exhaustion, 70% severe Depersonalization, and 55% low Personal Accomplishment. Among the sociodemographic variables analyzed, no one has emerged as a consistent predictor factor.

Conclusion: . Effective management of burnout requires a comprehensive multidimensional approach. Promoting well-being among dental postgraduate students is essential, not only for their mental health but also for the quality of care they provide.

Keyword: . Dentistry, Depersonalization, Emotional Exhaustion, Occupational Health, Psychological Stress, Tunisia.

■ Paper 18:

Differential regulation of pro-inflammatory and anti-inflammatory genes in the rat incisors dental pulp following exposure to LPS, NO, ATP and PGE2

a,b A Alhelal, Fadi A. Al Quesbi, b Waleed Alghurabi b, Whitworth Jc, Gillespie JId

a Department of Conservative Dentistry, College of Dentistry, University of Babylon, Hilla, Iraq

b Department of Conservative Dentistry, College of Dentistry, University of Al-Ameed, Karbala, Iraq

c Clinical Consultant/Senior Lecturer, Centre for Oral Health Research, School of Dental Sciences, UK

d Professor of Human Physiology, School of Dental Sciences, UK

The dentine-pulp complex bears a great resemblance to other connective tissues in the body; however, it has considerable complexity and a number of unparalleled features, due to its enclosure within the hard and non-compliant shell of the tooth in all directions except the small apical foramen. This encirclement may limit the pulp's ability to neutralise and recover from microbial invasion. Aim of study: To analyse the effect of inflammatory stimuli and mediators on some anti and pro-inflammatory molecules utilizing quantitative reverse transcriptase polymerase chain reaction (qRT-PCR) and to explore a possible cross-linkage between different pathways by the inclusion of key-role enzymes and receptors from these pathways in an effort to further elucidate the complexity associated with pulp inflammation and pathology.

Materials and Methods: 41 male Westar rats (weight 260-400 g) were included in this work. After killing in a CO₂ chamber, both mandibular incisor teeth were extracted and pulp tissues (mean weight=14 mg) removed. Pulp tissues from 13 rats were used as a source of total RNA immediately after extraction. The pulp tissues from the remaining 28 rats were stored in a nutrient medium (DMEM) in which, for each rat, the right mandibular incisor was assigned for the control group and left for the test group for direct comparison. The pulps (test and control) were divided into four groups (n=7). One test group was incubated with LPS from *Escherichia Coli* serotype 026:B6 (10 µM) (Sigma Aldrich, UK), one with NO donor (diethylamine NONOate

dimethylammonium salt (NONOate) (10 μ M) (Sigma Aldrich, UK), one with ATP analogue (2'(3')-O-(4-benzoyl benzoyl) adenosine-5-triphosphate tri (triethylammonium) salt (100 μ M) (Sigma Aldrich, UK) and the last one with PGE2, while their corresponding control groups were incubated with nutrient media only. At the end of the incubation period (three hours), pulps were removed, total RNA extracted, reverse transcribed to cDNA and PCR procedure accomplished. The effect of incubation materials was tested by checking the levels of some carefully selected pro and anti-inflammatory cytokines and mediators including Cyclooxygenases (COX1 and COX20, EP1, EP2, IL1, IL1 receptor (IL1R), IL6, IL6R and Toll like receptor 4 (TLR4) and compare these levels with the corresponding control groups. Extraction of total RNA from the pulp tissues was accomplished using an RNeasy mini kit **Results:** A qRT-PCR quantitation for the target genes within LPS-treated and corresponding non-treated controls. Samples were operated in duplicates in the presence of β -actin as a normaliser. The level of gene expression was calculated after normalising against β -actin in each sample and is presented as relative mRNA expression units. Note that Ct values are inversely proportional to the actual mRNA expression. Values are mean \pm SEM (n=7 per gene). Student t-test was used to detect the level of significance, (*) refers to significant differences, in which $P < 0.05$. B is an illustration of the upregulation of target genes in response to LPS incubation by fold changes. The fold change value is the fold differences of the target genes in the test samples relative to the control samples and can be calculated according to the formula fold change = $2^{-\Delta\Delta Ct}$. Of direct visualisation of the changes in the target genes histologically, immunohistochemistry experiments were accomplished to explore normal (n=3) and LPS incubated (n=3) pulp tissues using specific antibodies. Immunoreactivity (IR) in the normal pulp was found in a localised area within the odontoblast cell bodies (OCB), in a few cells within the pulp and the walls of the blood vessels as shown in Figure 3-A, B and C respectively. No COX-1 IR was found in the subodontoblast layer (SOL). Conclusion, , it is important to highlight the fact that dental pulp from rat mandibular incisor can be regarded as a good source of mRNA even after 3-hour period of incubation, with evident tissue viability demonstrated by the response of the target genes with up or down regulation within that time scale

■ Paper 19:

Comparison between two different types of remedies for Aphthous Ulcer In pregnant women

Sinan Forat Hussein¹, Aymen Ahmed Jawad Alkhafaji², Tahreer Shannan Alwan¹, Hussein Aziz Naser³, Ali M. Jaafar Abdulsahib³, Saif M. Hassan¹

¹ Department of Pharmacy, Al-Zahrawi University College, Karbala, Iraq

² College of Dentistry, AL Ameed University, Iraq

³ Al-Zahraa University for Women, Karbala, Iraq

Abstract:

Recurrent aphthous ulcers (RAU) are common oral mucosal conditions, with a prevalence of approximately 25% worldwide. They manifest as minor or major aphthous ulcers, often recurring due to factors like genetics, nutritional deficiencies, stress, and immune dysfunction. Pregnant Women are more commonly affected, with orthodontics and stress identified as significant risk factors. Although RAU is a very common condition, no definitive treatment has emerged. At the present time, treatment objectives are pain reduction, decrease in number and size of ulcers and reduction in frequency of attacks. This study aims at assessing whether the remedy (consisting of: tetracycline capsule 5 mg, prednisolone tablet 5 mg, Nystatin drops 2cc, and glycerin solution 20cc) is effective in reducing oral aphthous ulcers in patients in comparison to a standard treatment (triamcinolone oral gel). Objective. The aim of our study was to evaluate a range of heart rates in the first trimester in twin pregnancy and the influence of the rate of fetal heart on the outcome of the pregnancy. Material and methods. The study included 89 twin pregnancies between 6 and 11 weeks of pregnancy (78 pregnancies finished with good outcome and 11 with unfavorable outcome).

Keyword: Aphthous; Canker sores; Antimicrobial agents; Anti inflammatory agents; Systemic treatment; Remedy

■ Paper 20:

Effect of addition of polymerized polymethyl methacrylate (PMMA) and zirconia particles on impact strength, surface hardness, and roughness of heat cure PMMA: An in vitro study

Duaa Subhi Rasan¹, Firas Abdulameer Farhan²

¹ MSc student, Karbala, Iraq,

² Prosthodontic Department, College of Dentistry, University of Baghdad

Abstract:

Introduction: This study was designed to examine the effects of addition of the combination of polymerized polymethyl methacrylate (PMMA) and zirconia (ZrO₂) particles to heat cure PMMA resin on impact strength, surface hardness, and roughness. **Methods:** The 70% (w/w) of polymerized PMMA powder (particle size: 0.70mm) was mixed with 30% (w/w) of zirconia powder (ZrO₂)(1mm) to produce PMMA-ZrO₂ filler. Ninety acrylic specimens created were divided into three groups containing 0% wt (Control group), 2% wt, and 4% wt, PMMA-ZrO₂ filler. Ten specimens were used for impact strength, surface hardness and roughness test, blindly. Data were analyzed via one way ANOVA and the Tukey post hoc test using R 3.6.3. **Results:** There was statistically significant difference among study groups regarding surface hardness and roughness ($p < 0.001$). Yet, nonsignificant difference was found on the subject of impact strength ($p=0.33$). Post hoc test showed statistically significant difference for all pairwise comparisons as regards surface hardness and roughness ($p < 0.05$). **Conclusion:** The incorporation of PMMA-ZrO₂ filler did not improve impact strength (resistance during an unexpected blows or dropping). Yet, increased surface roughness and hardness, concentration-dependently.

Keyword: denture base, impact strength, polymerized polymethyl methacrylate particles, polymethyl methacrylate resin, surface hardness, surface roughness, zirconia; zirconium oxide

■ Paper 21:

A Double-Blind, Randomized Clinical Trial Comparing Sedation Outcomes of Dexmedetomidine and Ketofol in Pediatric Dental Interventions

Sheren Sameer Yousif¹, Dr. Hawraa Abdulla Spahi², Dhuha Najm Abdulhussein³, Samaneh Razeghi⁴

1 Department of Pediatric and Preventive Dentistry, College of Dentistry, University of Al- Ameed, Karbala, Iraq.

2 Pediatric Dentistry, Ministry of health, Iraq.

3 AL-Iraqia University, College of Dentistry, Iraq.

4 Pediatric Dentistry, Department of community Oral Health, School of Dentistry, Tehran University of Medical Sciences, Tehran, Iran.

Abstract:

Background: and Objective: Fear and anxiety in pediatric patients undergoing dental procedures remain significant challenges in clinical practice. Despite the availability of various sedation protocols, evidence regarding their comparative safety and efficacy in children is limited. This study aimed to evaluate the sedation efficacy and safety of intravenous ketofol (a ketamine-propofol combination) versus dexmedetomidine (Dex) as premedications for anxious children undergoing endodontic treatment. Methodology: A double-blind, randomized clinical trial was conducted with 40 anxious pediatric patients scheduled for endodontic treatment. The participants were randomized into two groups (20 patients each). Group I received ketofol (2 mg/mL ketamine and 4 mg/mL propofol) with a loading dose of 0.3125 mL/kg intravenously (IV) over 10 minutes, followed by a maintenance infusion of 0.05–0.125 mL/kg/h. Group II received Dex (4 µg/mL) with a loading dose of 2 µg/kg IV over 10 minutes, followed by a maintenance infusion of 0.1–1 µg/kg/h. Vital parameters, including non-invasive blood pressure (BP), oxygen saturation (SpO₂), heart rate (HR), and respiratory rate (RR), were monitored at baseline, every 2 minutes initially, and every 5 minutes for up to 1 hour. Ramsay sedation scores were assessed pre- and postoperatively, and Aldrete's recovery scores were recorded postoperatively. **Results:** Group I (ketofol) demonstrated a significantly shorter sedation onset time ($P = 0.017$) compared



to Group II (Dex). However, Group I exhibited longer discharge times and required more frequent rescue doses and procedure interruptions ($P < 0.001$). Dex provided more stable respiratory parameters but was associated with a higher incidence of bradycardia compared to ketofol. Group I showed significant increases in mean arterial blood pressure (ABP), while Group II displayed a biphasic BP response. Conclusion: Dexmedetomidine is an effective sedative for pediatric patients undergoing endodontic treatment, characterized by minimal interruptions, lower rescue medication requirements, and shorter procedure and discharge durations. Although Dex has no adverse effects on respiration, it is associated with bradycardia and biphasic BP changes, necessitating careful dosing and monitoring. These findings highlight the importance of tailoring sedation protocols to individual patient needs for optimal outcomes.

Keyword:Dexmedetomidine; Endodontic Treatment; Human; Hypnotics; Ketofol; Premedication; Pediatric; Sedatives; Sedation

■ Paper 22:

Knowledge, Practices, and Perception of Predatory Journals among North-African Dental University Hospital Doctors.

Abir Mannai 1,2, Islam Khadem I 1, Mehdi Khemiss 1,3

1 Faculty of Dental Medicine, University of Monastir, Tunisia

2 Approche Biologique et Clinique Dento-Faciale, University of Monastir, Monastir, Tunisia;

3 Research Laboratory Réhabilitation fonctionnelle et esthétique des maxillaires, University of Monastir, Tunisia.

Abstract:

Introduction. Predatory journals are referred to illegitimate journals that threaten scientific integrity by publishing low-quality research. This study aimed to assess the knowledge, practices, and perceptions regarding these journals among Dental University Hospital Doctors (DUHD) in Tunisia.

Material and methods. A cross-sectional and descriptive study was conducted

from September 1 to 26, 2025, at the Faculty of Dental Medicine, University of Monastir (Tunisia). All DUHD, including academic staff and residents from various dental specialties, were invited to complete the validated Predatory Journals Knowledge and Practices Assessment Questionnaire via Google Forms. DUHD were not given a time limit for completing the questionnaire but they received standard follow-up emails reminder after receiving their original invitation to participate

Results. Among 339 potential participants, 178 (77% were women) completed the questionnaire. Over half (53.9%) reported no prior training on predatory journals. While more than 50% of DUHD correctly identified predatory journals in most questions, residents demonstrated lower knowledge than academic staff. Regarding practices, 52.2% had never submitted to, and 57.3% had never published in, predatory journals. However, only 16.9% reported checking blacklists before submission. Most respondents perceived predatory journals as deceptive (74.7%) and believed they mainly attract academics seeking rapid promotion (75.9%).

Conclusion: . Although DUHD showed relatively good awareness of predatory journals, significant gaps persist, especially among residents. Targeted training programs and institutional policies are needed to prevent unintentional submissions.

Keyword: .: Ethics, Predatory journals, Scientific misconduct, Tunisia.

■ Paper 23:

MicroRNA-155 (miR-155) as an accurate biomarker of periodontal status and coronary heart disease severity: a case–control study

Zina A. Daily^{1,2}, Batool Hassan AlGhurabei³, Ahmed Makki A. AlQarakhli⁴ and Ryan Moseley⁵

1 Department of Periodontics, College of Dentistry, University of Baghdad, Baghdad, Iraq.

2 Department of Periodontics, College of Dentistry, University of AlAmeed, Karbala, Iraq.

3 Department of Basic Science, College of Dentistry, University of Baghdad,



Baghdad, Iraq.

4 Department of Oral Diagnosis, College of Dentistry, University of Anbar, Ramadi, Iraq.

5 Disease Mechanisms Group, School of Dentistry, College of Biomedical and Life Sciences, Cardiff University, Cardiff, UK.

Abstract:

Background: Increasing evidence supports associations between periodontal disease and coronary heart disease (CHD). This case-control study evaluated whether inflammatory regulator, microRNA155 (miR155), could be utilised as a biomarker of periodontitis and/or CHD. Methods Of 120 participants, 30 patients had clinically healthy periodontium (controls, C), 30 patients had generalized periodontitis (P), 30 patients had CHD and clinically healthy periodontium (ASC); and 30 patients had CHD with generalized periodontitis (ASP). Patient demographic and periodontal characteristics (plaque index, bleeding on probing, probing pocket depth and clinical attachment loss), were collected. Patient whole blood and saliva levels of miR155 and proinflammatory cytokine (interleukin1 β), were quantified by quantitative real time polymerase chain reaction (qRTPCR) and enzymelinked immunosorbent assay (ELISA). Oneway ANOVA with posthoc Tukey test was used to determine differences among the four groups. Chi Square test was used for participant gender comparisons. Pearson correlation tests and multiple linear regression analyses were used to assess associations between the demographic and clinical variables analysed, versus IL1 β and miR155 levels. miR155 and IL1 β accuracy in differentiating healthy versus other patient groups were analysed using receiver operating characteristic (ROC) curves, by calculating area under the curve (AUC) values and sensitivity and specificity cutoff points using Youden's index. Statistical tests of sensitivity and specificity were conducted using the McNemar test. Results Whole blood miR155 levels were elevated in periodontitis/nonperiodontitis patients with CHD (ASP, ASC), and periodontitis patients alone (P) ($p < 0.001$). Receiver operating characteristic (ROC) and area under the curve (AUC) analyses confirmed miR155 accuracy in discriminating P, ASC and ASP groups (AUC 0.6861–0.9944, $p < 0.0001$ 0.05), coupled with high sensitivity (76.7–100.0%), specificity (53.3–96.7%) and cutoff points ($> 0.955 > 2.915$ a.u.; $p < 0.0001$). miR155 levels further distinguished between CHD (ASC, ASP) and periodontitis (P) patients (AUC ≥ 0.8378 , sensitivity $\geq 88.7\%$, specificity $\geq 73.3\%$, cutoff > 2.82 a.u.; $p < 0.0001$),

and between ASC and ASP patients (AUC 0.7578, sensitivity 80.0%, specificity 50.0%, cutoff > 7.065 a.u; $p < 0.001$). Subsequent analyses identified positive correlations between miR155 and the various patient demographics, salivary interleukin1 β and periodontal parameters assessed. Conclusions This study advocates miR-155 as an accurate diagnostic/prognostic biomarker of periodontitis and/or CHD severity, thereby improving detection and treatment for both conditions.

Keyword: Periodontitis, Coronary heart disease, MicroRNA-155, Inflammation, Interleukin-1 β , Biomarker

■ Paper 24:

Correlation Between Periodontal Disease and Oral, Oropharyngeal, and Parapharyngeal Cancers

Zina Ali Daily¹, Nawres Bahaa Mohammed², Samer Majeed Mohammed², Hashim Mueen Hussein³

¹ Periodontics Department, College of Dentistry, University of Al-Ameed, Karbala, Iraq;

² Maxillofacial Surgery Department, Dentistry College, University of Al-Ameed, Karbala, Iraq;

³ Department of Conservative Dentistry, College of Dentistry, Mustansiriyah University, Baghdad, Iraq

Abstact

Background: Periodontitis is an inflammatory disease, and contributes to several inflammatory conditions, such as cancer. The relationship between periodontal disorders and different human malignancies is not well understood. The purpose of this study is to assess the association of periodontitis severity with cancers in the oral cavity, oropharyngeal and parapharyngeal regions. **Methods:** The sample comprised 300 participants divided into four case groups: 75 oral, oropharyngeal, or parapharyngeal cancer patients with periodontitis (CA-with-P); 75 oral, oropharyngeal, or parapharyngeal cancer patients without periodontitis (CA-without-P); 75 periodontitis (P) patients without cancers; and a control (C) group of 75 healthy individuals. All partici-

pants were subjected to a periodontal examination that considered parameters such as bleeding on probing (BOP), plaque index (PI), probing pocket depth (PPD), and clinical attachment loss (CAL). The type of tumours was identified via a histological analysis of a biopsy sample. Saliva samples were also collected, and an enzyme-linked immunosorbent assay (ELISA) kit was used to determine interleukin 8 (IL-8) and nuclear factor kappa B (NF- κ B) levels. **Results:** The research findings indicated a significant increase in the number of sites with clinical observations of BOP (85.11,73.84), PI (87.23.88.14), PPD (8.03,6.82), and CAL (8.67,7.34) in groups CA-with-P and P. The CA-with-P, CA-without-P, and P groups had higher levels of salivary IL-8 (192.03, 121.89,89.22) and NF- κ B (10.242, 8.172, 6.324) than the C group. Moreover, there was a significant correlation between the severity of periodontitis and the malignancies in the oral, oropharynx, and parapharyngeal regions. **Conclusion:** This study assessed the mechanisms underlying the correlation between these two disorders, as elucidated by higher levels of salivary IL-8, NF- κ B and an increase in clinical periodontal parameters. Periodontal bacteria, which contributes to the development of periodontal disorders, could have a major impact on the onset of oral cancers. **Keyword:** periodontitis, oral malignancy, oropharyngeal malignancy, parapharyngeal cancer, IL-8, NF- κ B

■ Paper 25:

Modulation of TRAIL-Induced Apoptosis by *Moringa oleifera* Seed Extract and Docetaxel in LNCaP Cells

Aymen ahmed Jawad Alkhafaji 1, Ali mohamed saed almastafa2 , Ali M. Jaa-far Abdulsahib3 , Sinan Forat Hussein 4

¹Department of Basic Science, dentistry college, University of AL-Ameed; Iraq

²Department of pharmaceutical chemistry, College of pharmacy, University of AL-Ameed; Iraq

³Department of pharmacology, college of pharmacy, University of Al-Ameed, Iraq

⁴Department of Medical Laboratory Techniques, college of pharmacy , Alz-

ahrawi university ; Iraq

Abstract:

Background:Cancer continues to be one of the leading causes of worldwide mortality, which has led to a quest for new therapeutic agents, including natural products from plants. Moringagatec *M. oleifera* is a medicinal plant, and TRAIL shows an affinity to apoptosis in cancer cells.

Objective:This study aimed to evaluate the individual and combined effects of an ethanolic extract of *Moringa oleifera* seeds and the chemotherapeutic agent docetaxel on the viability and TRAIL expression of the LNCaP human prostate cancer cell line. **Materials and Methods:** Ethanolic extract was obtained from the seeds of *Moringa oleifera* by Soxhlet's apparatus. LNCaP cells were then exposed to different doses of extract, docetaxel and/or the combination. MTT assay detected cell viability after 24 and 48 h. The levels of TRAIL were measured with an ELISA kit.

Results: The *Moringa oleifera* seed extract and docetaxel significantly induced dose- and time-dependent reductions in LNCaP cell viability ($P \leq 0.001$) along with significant increases in TRAIL levels. The IC 25 of the extract in combination with IC 50 dose of docetaxel exhibited synergistic potentiation of antiproliferative activity accompanied by highly remarkable enhancement in TRAIL expression ($P \leq 0.001$).

Conclusion:*Moringa oleifera* seeds ethanolic extract has a potent antiproliferative and pro-apoptotic activity in LNCaP cells which is partly mediated through TRAIL up-regulation. In addition, it has a synergistic effect with docetaxel and can be used as an adjuvant therapy for prostate cancer.

Keyword:*Moringa oleifera*; Apoptosis; Docetaxel; LNCaP Cells.

■ Paper 26:

The Impact Nigella Sativa Oil in Post-Extraction Healing of surgical extraction Lower Third Molars

Kamal Sahib Mizal 1, Muntathar Muhsen Abusanna2, Zina Ali Daily3

1.2 University of AL-Ameed. collage of dentistry, Department of oral and maxillofacial surgery, karbala, Iraq.

3 University of AL-Ameed. collage of dentistry, Department of periodontology, karbala, Iraq.

Abstract:

Background: Pain, edema, and a delay in tissue repair are typical complications following surgical extraction of an impacted third tooth. . While conventional treatments focus on symptomatic relief, there is growing interest in natural agents that may accelerate healing. Nigella sativa (black seed oil) possesses anti-inflammatory and analgesic properties, making it a potential adjunct in oral surgery. The aim of this study was to compare how Nigella sativa oil speeds up the healing process and eases pain after surgery to remove impacted mandibular third molar with the normal healing process that happens after surgery. **Materials and Methods**Forty individuals had mandibular third molar extraction as part of this clinical trial. individuals ranged in age from eighteen to forty years. Patients were divided into two equal groups and given different treatments following extraction: one group got 1 cc of Nigella sativa oil rubbed into the extraction socket, and the other group got standard postoperative care with irrigation with normal saline. The degree of pain, facial swelling, and trismus were evaluated on the first, third, and seventh postoperative days using visual analog scales, anatomical landmarks, and intraincisor distance measurements, respectively. **Results:** Statistically, patients in the study group had less pain ($p=0.0118$), swelling ($p=0.0079$), and trismus than patients in the control group. **Conclusion:**A study showed that putting Nigella sativa oil on the area after an impacted mandibular third tooth extraction helped reduce pain, swelling, and trismus. It is suggested that more study be done with larger samples and longer follow-up. These findings support the anti-inflammatory and analgesic properties of Nigella sativa. The results suggest that this natural agent may be beneficial in enhancing patient

comfort and accelerating soft tissue healing during the early postoperative phase. KEY WORDS: Nigella Sativa Oil, extraction of lower third molar , post-operative pain and swelling , trismus

■ Paper 27:

Effect of Tongue Coating On Halitosis Among 15 Years Old Students in Karbala City-Iraq

Rafal Abdulaziz Alawsy (1), Bahaa N Madloom(2), Ali Omran J. Alyasary(3), Kamal Sahib Mizal(4)

(1) Preventive Dentistry

(2) Oral Medicine, Jabir Ibn Hayyan for Medical Sciences University.

(3) Conservative Dentistry

(4) Oral Surgery, collage of dentistry, University of AL-Ameed .

Abstract:

Background:Tongue coating (TC) is a grayish-white deposit which is the main contributor to intraoral halitosis (IOH) and is also a commonly unwanted issue. Sulfur compounds (VSC) are the main constituents of IOH, with TC and periodontal diseases recognized as the two primary sources of VSC. The surface of the tongue, noted for its papillary structure, can harbor a considerable amount of shed cells, white blood cells, and microorganisms, which contribute to the foul-smelling compounds associated with bad breath. This study aimed to assess the relationship within tongue coating and halitosis. Material and method: The investigation involves 400 male pupils who were selected at random from 44 secondary schools located in Karbala city, Iraq. The Halimeter was employed to evaluate levels of halitosis. The assessment of tongue score was performed using the tongue coating index (TCI) as described by Shimizu et al. (2007).

Result: A relationship was found between halitosis and tongue score (P value 0.000). it was found that tongue coating scores were significantly associated with VSC values.

Conclusion:Halitosis may result in psychological challenges for individuals,

highlighting a considerable health issue. The results demonstrate a beneficial effect of heightened awareness about oral hygiene and the implementation of tongue brushing, leading to improved oral odor and overall oral health.

Keyword: Halitosis, halimeter, tongue coating index, students

■ Paper 28:

Evaluation The Effect of Dexamethasone Injection in The Pterygomandibular Space in Reduce Postoperative Complications of Surgical Extraction of Impacted Lower 3rd Molar

Muntathar Muhsen Abusanna¹, Zina Ali Daily², Kamal Sahib Mizal³

1.2.3 Collage of dentistry/ AL-Ameed university

Abstract:

Background: Although pain is often not fully managed after surgery, a skilled surgical technique, careful tissue manipulation, and the administration of analgesics may all help to avoid postoperative problems. Therefore, looking into remedies to lessen postoperative sequelae looks like a sensible objective in many clinical investigations. The purpose of this study is to determine if a single 8 mg dosage of dexamethasone injected before to surgery will effectively reduce trismus, facial edema, and postoperative discomfort after the surgical extraction of impacted lower wisdom teeth.

Materials and Methods: In this randomized prospective clinical study, 40 patients were chosen at random to have their impacted mandibular third molars removed. The patients were then split into two groups, with 20 patients in each. After a few minutes of local anesthesia injection, patients in the study group were given a single dose of dexamethasone 8 mg in 2 ml through the pterygomandibular space, while patients in the control group only received local anesthesia. All of the patients' impacted teeth were removed by the same surgeon. Before surgery, the patient's mouth opening, swelling, and pain were measured as a baseline. They were also measured on the first, third, and seventh postpartum days for pain and on the third and seventh for swelling and maximum interincisal opening. **Findings:** The bigonial width was not significantly different between the control group and the study group. Also, the con-

trol and study groups had very different measurements of swelling between the third day after surgery and the value before the surgery, as well as between the seventh day after surgery and the value before the surgery. In the control group, measurements of mouth opening were very different ($P = 0.04$), but in the dexamethasone group, measurements were not very different ($P = 0.08$). On the third and seventh days after surgery, there was a significant difference between the groups in how much their mouths opened ($P = 0.00$). On the third and seventh days after the surgery, pain scores were very different between the two groups ($P = 0.01$, $P = 0.00$, respectively). Conclusion: An 8 mg dexamethasone shot into the pterygomandibular space helped reduce pain and reduced mouth opening after surgery for the lower third tooth, but our data shows that it wasn't very good at lowering swelling.

Key word: Impacted mandibular third molars, Dexamethasone injection, Mouth opening, Swelling, Pain.

■ Paper 29:

Assessing the Performance of ChatGPT's 4.0 in Oral Pathology: A Pilot Study

Sinda Yacoub * † , Afef Slim* †, Hadil Daboussi†, Kamel Sahib Mizal‡

* Department of Oral Medicine and Oral Surgery, Academic Dental Clinic of Monastir, Monastir, Tunisia.

† Faculty of Dental Medicine, University of Monastir, Monastir, Tunisia.

‡ College of Dentistry, University of Al-Ameed, Karbalaa, Iraq.

Abstract:

Objective: To assess the efficacy of ChatGPT-4 in diagnosing oral lesions via clinical pictures., **Methods:** Images of oral mucosal ulcers identified by pathological analysis were utilized. Oral pathologies were categorized based on color, fundamental lesion, and illness kind. Subsequently, photographs were provided individually to ChatGPT-4 for analysis, diagnosis, and recommendations for appropriate treatment. Subsequently, two seasoned oral pathologists evaluated the complexity of oral lesions and their correspondence

with ChatGPT-4 responses, employing a five-point Likert scale. Subsequently, clinical data were included into images with erroneous diagnoses generated by ChatGPT-4. Subsequently, this Chabot was requested to respond again to the same prompts for the comprehensive circumstances. Outcomes. The conclusive sample comprised 34 photographs. Of these, 14 were accurately diagnosed (38.2%). Upon incorporating clinical data into the photographs (n=21), the rate escalated to 79.4%. The disparity in diagnostic accuracy prior to and subsequent to the incorporation of clinical information was statistically significant ($p<0.01$). No association was discovered between ChatGPT-4's diagnosis and the complexity of clinical diagnoses ($r=-0.263$). ChatGPT-4 accurately detected 100% of speckled lesions, malignant tumors, and oral possibly malignant illnesses.

Conclusion: . Chat GPT-4 can assist dentists in normal consultations to identify suspicious lesions of the oral mucosa. However, it is not designed to supplant human skill.

Keyword: S. Artificial Intelligence, Neural Network Model, Oral Diagnosis, Oral Diseases, Oral Lesions.

■ Paper 30:

Dimensional Changes of Denture Base Materials Reinforced with Nanoparticles

Asraa Yaseen Fadhell¹, Amaal Kadhim Mohammed², Ammar Arab Badai³

¹ College of Health and Medical Technology, Middle Technical University, Baghdad, Iraq

² College of Health and Medical Technology, Middle Technical University, Baghdad, Iraq

³ Middle Technical University, Baghdad, Iraq

Abstract:

Background: Polymethyl methacrylate (PMMA) is the most widely used denture base material due to its esthetics, biocompatibility, and ease of processing. However, it is prone to dimensional changes caused by polymeriza-

tion shrinkage, water sorption, and thermal cycling, which negatively affect denture fit, retention, and patient comfort. Reinforcement with nanoparticles has recently emerged as a strategy to enhance dimensional changes.

Objective: This systematic review assessed the effect of several nanoparticles on the dimensional changes of denture base resins produced through heat curing, CAD/CAM milling, and 3D printing.

Method: s: Electronic searches were performed in PubMed, ScienceDirect, Google Scholar, and Mendeley for studies published from 2019 to 2025, supplemented by human searches. A total of 245 papers were evaluated, and 17 research studies fulfilled the inclusion criteria. Data were obtained on nanoparticle type, concentration, synthesis method, and dimensional results. **Results:** The integration of nanoparticles enhanced dimensional changes during fabrication methods. Zirconia (1–3 wt.%) and titanium dioxide (0.5–5 wt.%) produced the most advantageous outcomes. Concentrations over 3 wt.% frequently resulted in agglomeration, surface imperfections, and diminished impact strength. Gold nanoparticles have shown significant enhancements, but continue to be economically unfeasible. Boron nitride, silica, cerium oxide, alumina, zinc oxide, and nano-zeolite exhibited advantageous benefits, with outcomes varying based on particle dispersion and printing orientation. Heat-cured PMMA exhibited the most substantial long-term dimensional change, but 3D-printed resins displayed more pronounced early changes, which were markedly diminished by incorporating nanofillers. CAD/CAM milling attained remarkable precision but was constrained by expense and availability.

Conclusion: Nanoparticle reinforcement is an effective approach for improving the dimensional changes of denture base resins, with 1–3 wt.% zirconia providing the optimal equilibrium of stability and strength. Heat-cured PMMA is the standard among fabrication methods, while nanofiller-reinforced 3D-printed resins offer a clinically feasible alternative. Future research should use standardized testing methodologies and prolonged in vivo studies to validate clinical applicability.

■ Paper 31:

Antiproliferative activity of moringa oleifera's leaves ethanolic ex-

tract and

docetaxel on Lncap cell line and on the level of tumor necrosis factor-related apoptosis inducing ligand

Aymen Ahmed 1 , Entisar J. Al-Mukhtar 2 , Rana A. Ghaleb3

1 Department of Pharmacology, College of Medicine, University of Babylon, Iraq

2 Department of Pharmacology, College of Medicine, University of Babylon, Iraq

3 Department of anatomy and histology, College of Medicine, University of Babylon, Iraq

Abstract:

Background: Cancer is abnormal cells growth that is responsible for the majority of global deaths and cancer is expected to rank as leading cause of death and the single most important barrier to increasing life expectancy in every country of the world in the 21st century. According to the estimates from the world health organization in 2015, cancer is the first or second leading cause of death before age 70 years in 91 of 172 countries, and it ranks third or fourth in an additional 22 countries. Many anti-cancer drugs in current use such as paclitaxel, vincristine, and vinblastine are naturally derived agents. The aim of this study is to determine the effects of ethanolic leaves extract of *Moringa oleifera* and docetaxel each separately and in combinations on the proliferation of LNCaP cell line, and on the level of tumor necrosis factor related apoptosis induced ligand (TRAIL). **Methods:** This work was performed in the laboratory of cancer research at college of medicine\ university of Babylon during the

period from January 2021 to October 2021. The study was approved by the ethics committee in the college of medicine at university of Babylon. **Results:** The ethanolic extract of *Moringa oleifera*'s leaves and docetaxel cause significant ($P \leq 0.01$) reduction in the viability of LNCaP cell line in dose and time depended manner, also the of level TRAIL was highly significantly ($P \leq 0.001$) increased. The combination

of ethanolic extract of *Moringa oleifera*'s leaves and IC50 of docetaxel enhanced the antiproliferative effect of docetaxel against LNCaP cell line in

different incubation period (24-48 hours). Conclusion: Ethanolic extract of *Moringa oleifera*'s leaves reduce the viability of LNCaP cell line and increase TRAIL level in these cells in a dose depending manner. Ethanolic extract of *Moringa oleifera*'s leaves enhanced the antiproliferative effect of docetaxel against LNCaP cell line.

Keyword: ---*Moringa oleifera* leaves, Tumor necrosis factor-related apoptosis-inducing ligand, LNCaP cell line, MTT assay.

■ Paper 32:

The Importance of Vitamin D in Maintenance of Oral Health

Taghreed H. Al-Sadoon¹, Malak Shaker²

¹ Technical College Imam Jaafar Al-Sadiq University

² College of Dentistry Al-Sara University

Abstract:

The purpose of this article was to elucidate the impact of vitamin D on dental health and to establish that a deficiency in vitamin D is a contributing factor to chronic periodontitis. 1, 25(OH)₂ D facilitates the proliferation of osteoblasts and regulates the synthesis of proteins such as collagen, alkaline phosphatase. Bones are developed with the help of osteocalcin. RANKL is a protein that attaches to the surface of osteoblasts, allowing them to improve the production and functionality of osteoclasts. Consequently, 1, 25 (OH)₂ D regulates both the level of bone formation and with the assistance of osteocalcin. RANKL is a protein that binds to the membrane of osteoblasts, enabling osteoblasts to enhance the production and function of osteoclasts. Therefore, 1, 25 (OH)₂ D governs both the extent of bone formation and the rate of bone resorption. Additionally, it enhances the ability of gingival epithelial cells to fight bacteria and diminishes inflammation in the gums. A total of 60 patients with oral disease, 10 (16.66%) gingivitis patients, 12 (20%) acute periodontal, 12 (20%) chronic periodontal, 10 (16.66%) aggressive periodontitis with 4 (6.66%) periodontal in pregnant women, and 12 (20%). For a comparison, healthy patients were signed up. This study took into account the application amongst serum (VD) levels in order to give a full picture of the illness and



make diagnoses. C-reactive protein (CRP), a measure of inflammation, as well as white blood cell (WBC) follow-up. Our findings revealed a link between low vitamin D levels and numerous oral disorders such as gingivitis, caries, and mouth inflammation. These discoveries may have important implications for community health.

Keyword:Periodontitis; inadequate vitamin D intake; 25-hydroxyvitamin D; and oral health.

■ Paper 33:

Evaluation Of Sorption And Solubility In Acrylic Resins

Amaal kadhim ALSaadil

1 Dental Technologies Department, College of Healthy &Medical Technologies

Abstract:

The research evaluated the water absorption and solubility in 3D-printed acrylic material (Crealty) in contrast to the base resin (Vertex). This study included twenty acrylic disc samples, divided into two groups of ten ($n = 10$). samples in the initial group were produced using a traditional heat-polymerizing technique (control), where as the second group was created digitally from 3D-printed resin then preserved at 37 °C using distilled water , thereafter incubated in dried type of silica gel for 23 hours at 37 °C ($\pm 1^\circ\text{C}$). Subsequently, they were maintained in the identical incubator for one hour at 23 °C ($\pm 2^\circ\text{C}$). Dried pieces then immersed in water for 14 days at 37 °C ($\pm 1^\circ\text{C}$) and weighed three times. Data regarding sorption and solubility were acquired. The analysis was conducted using SPSS by one-way ANOVA. The 3D-printed acrylic composite appear enhanced water absorption and solubility relative to the hot-cured acrylic resin. The performance of the 3D-printed acrylic resin was superior compared to that of the heat-cured acrylic resin

■ Paper 34:

Development Of Plant-Based Bio-Based Temporary Dental Fillings: A Sustainable Alternative To Conventional Fillings

Raghad U. Abass^{1*}, Falak O. Abas², M.R.M. Rejab³, Mohammed A. A⁴

¹College of Applied Science/ University of Technology-Iraq

²College of Chemical Engineering/ University of Technology-Iraq

³Faculty of Mechanical & Automotive Engineering Technology, University Malaysia Pahang Al-Sultan Abdullah, 26600 Pekan, Pahang, Malaysia

⁴College of Material Engineering/University of Technology/ Baghdad/ Iraq

Abstract:

The present research aims a developing alternative temporary dental fillings based on natural polymers extracted from frankincense, strengthened by the several weight ratio of eucalyptus and syzygium aromaticum fibers (0.02, 0.04 and 0.06wt. % eucalyptus and 0.04wt. % syzygium aromaticum respectively). The filling was prepared by solvent-removal treatment in a water solution for three hours, followed by filtration to remove unreacted components, and then reinforced with natural fibers. Mechanical (hardness) tests, scanning electron microscopy (SEM), structural (XRD) and functional (FTIR) analyses showed significant improvements in the polymer matrix cross-linking and increased adhesion and structural stability. Biological and toxicological tests using human white blood cells and MTT tests confirmed high compatibility and no toxicity at the concentrations used, with a viability rate of more than 90%. The results demonstrate the unique chemical and mechanical integration of frankincense and plant ingredients, which make these natural based temporary fillings a safe and effective solution with superior biochemical, mechanical and biocompatible properties, suitable for safe intraoral use for a short period of time and promoting the use of environmentally friendly natural materials as a sustainable alternative to traditional fillings.

Keyword:Environmentally Friendly Dental Materials, Boswellia Resin (Frankincense), Temporary Dental Restorative Materials.

Synthesis, characterization and antibiofilm-Synthesis, characteri

■ Paper 35:

Synthesis, characterization and antibiofilm-producing dental Streptococcus mutans potential of metal silica nanoparticles

Ayaat Nasser Wali1* and Zainab Nashaat AL-Saadi2 - Department of Biology, College of Science, Wasit University, Iraq

Abstract:

Streptococcus mutans is a Gram-positive bacterium regarded as an obligate human pathogen. It forms part of the oral microbiota, particularly within dental plaque. Dental caries is the most prevalent chronic disease of the oral cavity and results from a complex interaction between acid-producing, tooth-adherent bacteria and fermentable carbohydrates. Silica nanoparticles (SiO₂NPs) possess exceptional adsorption capacity, low density, low toxicity, a large surface area, and nanoscale dimensions, making them highly beneficial materials. They are widely applied in dentistry for tooth polishing, dental fillers, and the treatment of dentin hypersensitivity.

In this study, twenty *S. mutans* isolates obtained from a previous investigation were examined. The ability of the isolates to form biofilms was evaluated, showing that 9 (45%) produced strong biofilms, 7 (35%) produced moderate biofilms, and 4 (20%) produced weak biofilms. Molecular identification of *S. mutans* was performed using conventional PCR targeting the large subunit of the 16S rRNA gene with specific primer sequences. All isolates (20/20, 100%) tested positive. Molecular detection of virulence genes showed that 18 isolates (90%) were positive for *atpD*, 10 isolates (50%) for *relA*, 15 isolates (75%) for *comD*, and all isolates (20/20, 100%) for *sacB* (*ftf*).

In this study, silica nanoparticles were synthesized using the sol-gel method. Characterization by field-emission scanning electron microscopy (FE-SEM) revealed that the SiO₂ nanoparticles were aggregated, semi-spherical in shape, and had an average size of 35.22 nm. Energy-dispersive X-ray spectroscopy (EDX) confirmed silicon and oxygen as the primary elements, with weight percentages of 50.4% and 49.5%, respectively. X-ray diffraction (XRD) analysis confirmed the crystalline nature of the SiO₂ nanoparticles, showing a tetragonal crystal phase. Transmission electron microscopy (TEM) images further demonstrated that the synthesized SiO₂ nanoparticles were smaller than 100 nm.

The antibiofilm activity of the SiO₂NPs against *S. mutans* was evaluated using the microtiter plate assay. The nanoparticles exhibited inhibitory effects at concentrations of 0.10, 0.20, and 0.39 mg/mL. The most significant inhibition was observed at 0.39 mg/mL, where the reduction in biofilm formation was statistically significant ($p < 0.05$).



————— Fifth Theme —————

BASIC MEDICAL SCIENCES AND THEIR APPLICATIONS IN MODERN HEALTHCARE

■ Paper 1:

The Knowledge and Awareness of Female Students at University of Kerbala/College of Medicine about Vitamin D Importance for Reproductive Health and Fertility

Muhjah Falah Hassan¹, Sajad Majed Abbas², Ruqaia Jasim Mohamed², Eman Mohamed Mohsin²

¹ Assistant professor, Department of Anatomy, Histology and embryology/ College of medicine/University of Kerbala/Karbala/Iraq.

² Sixth stage medical student /College of medicine/University of Kerbala/ Karbala/Iraq.

Abstract:

Background: In addition to vitamin D role in bone and muscle health, it has a crucial role in several aspects of female reproduction including hormones regulation, fertility potential and healthy pregnancy. Even in females with sub-fertility, vitamin D plays a role in increasing the chance of getting pregnancy either spontaneously or following assisted reproduction. This study tried to evaluate female students at University of Kerbala/College of Medicine knowledge and awareness about vitamin D importance for female reproductive health and fertility. **Methods:** A descriptive cross-sectional study included 182 female students from different stages. A self-structured validated questionnaire was used to assess their knowledge and awareness about vitamin D role in reproduction, fertility potential, healthy pregnancy and its role in predisposition to PCOS development, PCOS symptomatology and management. **Results:** 90.8% of included students had a confirmed vitamin D deficiency. 43.4% were unaware about vitamin D importance for female reproductive health, more than 80% were unaware that vitamin D deficiency could affect ovarian reserve and oocyte quality, more than 70% were unaware that it could also affect the female reproductive hormones, reducing the chance of getting pregnancy, increasing miscarriage and pregnancy complication. More than 60 % did not know that vitamin D deficiency predispose to ovulatory disorders and its' assessment is important during the evaluation of sub-fertile females and before and during pregnancy. Around 71–72% were unaware of the relationship between vitamin D deficiency and PCOS, including its' role in symptoms worsening and management. **Conclusion:** There is a clear gap

in female students' knowledge about the role of vitamin D in reproductive health. While many students have vitamin D deficiency, fewer understand its' impact on female reproductive function and healthy pregnancy, this gap suggests a lack of targeted education despite the participants being in an academic environment or to lack of public health campaigns.

Keywords: Vitamin D, Vitamin D receptor (VDR) gene, Female reproduction, PCOS.

■ Paper 2:

Ovarian reserve and ovarian reserve tests in clinical practice : A narrative review.

Muhjah Falah Hassan¹, Sahbaa Hafedh Sagban², Rabab Zahir Al-Yasiry³, Pallav Sengupta⁴, Sulagna Dutta⁵

1 MBCHB, PhD, Department of Anatomy, Histology and Embryology, College of Medicine, University of Kerbala, Kerbala, Iraq.

2 Department of Anatomy, Histology and Embryology, College of Medicine, Karbala University, Karbala, Iraq.

3 Department of Anatomy, Histology and Embryology, College of Medicine, Babylon University, Hilla, Iraq.

4 Department of Biomedical Sciences, College of Medicine, Gulf Medical University, Ajman, UAE.

5 Basic Medical Sciences Department, College of Medicine, Ajman University, Ajman, UAE.

Abstract:

Background: There is a lack of a clear cut or universally agreed definition of the female ovarian reserve. **Aim:** To understand the term ovarian reserve and the most common markers in current use. **Conclusion:** The term "ovarian reserve" defined as a reproductive potential of female represented by the total number of follicles presenting within ovarian follicular pool. Several markers have been used to assess the number of oocytes within the follicular pool as approximate as possible, in clinical practice, AFC and AMH are commonly used as markers of oocyte quantity but not quality.

Keywords: Ovarian reserve, Ovarian reserve test, AMH and AFC.

■ Paper 3:

Differential Functions of Serum IL-21 and IL-10 in Patients with Celiac Disease: A Case-Control Investigation Connecting Disease Activity to Cytokine Profiles

Worood Younis Azawil & Imad Ahmed Rashid1

Department of Medical Laboratory Technology, Balad Technical Institute, Middle Technical University, Iraq

Abstract:

Background: Celiac disease (CD) is an immune-mediated enteropathy induced by the ingestion of gluten in genetically predisposed subjects. Although interleukin-21 (IL-21) and interleukin-10 (IL-10) are CD4⁺ T cell-derived cytokines with reciprocal immunological functions, their distinct roles in the pathogenesis of CD remain unclear

Aim: To measure serum IL-21 and IL-10 levels in patients with celiac disease in comparison to healthy controls and to analyze their correlation with disease activity.

Methods: In this case-control study, 60 biopsy-verified celiac disease patients and 60 age- and sex-matched healthy controls participated. We used ELISA to measure IL-21 and IL-10 in the blood. We recorded the levels of anti-tTG antibodies and the Marsh histopathology grades. The Mann–Whitney U test was used to compare groups, and Spearman’s rank test was used to find correlations.

Results: The levels of IL-21 and IL-10 were significantly higher in CD patients compared to controls (median [IQR]: IL-21, 31.7 [30.3–33.6] vs. 18.6 [17.7–19.4] pg/mL; IL-10, 14.5 [13.0–15.4] vs. 10.8 [9.9–11.2] pg/mL; $p < 0.001$ for both). In patients with CD, IL-21 exhibited a robust positive correlation with anti-tTG titers ($\rho = 0.56$, $p < 0.001$) and Marsh grade ($\rho = 0.42$, $p = 0.002$), while IL-10 showed no significant associations (all $p > 0.05$). The levels of IL-21 and IL-10 exhibited no correlation ($\rho = 0.14$, $p = 0.29$).

Conclusion: Although CD is associated with elevated levels of both IL-21 and IL-10, only IL-21 is strongly associated with serological and histopathological markers of active disease. These results imply that an inadequate compensatory anti-inflammatory response is reflected in the elevation of IL-10 and support IL-21 as a possible biomarker and therapeutic target in celiac disease.

Keywords: Celiac disease, anti-tTG, IL-10, IL-21, cytokines, biomarkers.

■ Paper 4:

The Knowledge and Awareness about the Effect of Narguile Smoking on Male Fertility among College Students at University of Kerbala

Hasan Abdulzahra Kareem¹, Mujtaba Ammar Yasir¹, Ahmad Hameed ka-reem¹, Muhjah Falah Hassan²

¹Sixth stage medical students, University of Kerbala / College of Medicine/ Karbala/Iraq.

²Assistant Professor, Department of Anatomy, Histology & Embryology/ University of Kerbala/ College of Medicine/Karbala/Iraq.

Abstract:

Background: Narguile (hookah) smoking is often accepted more than smoking in general especially in social group settings. Many cities with dedicated hookah lounges and cafes have contributed to its normalization, particularly among young adults and university students. However, its associated risks on male fertility have not been widely recognized.

Aim of the study: This study evaluates medical students' knowledge and awareness about narguile (hookah) smoking effects on male reproductive health.

Subjects & Methods: A descriptive cross-sectional survey included 102 male students from general medicine, dentistry, and pharmacy colleges at University of Kerbala by using a self-structured questionnaire, smoking behaviors, knowledge of fertility risks and perceptions of awareness campaigns were assessed, then, data were analyzed statistically to describe students' knowledge and awareness about narguile smoking on male reproductive health and fertility potential.

Results: The majority of included students were from general medicine college (60.8%), with the largest academic representation was the sixth-year students (30.4%), and 57.8% of them resided in other cities outside Karbala. 56.9% of included students were smokers and 27.5% were cigarette smokers. 76.5% of students were aware of hookah effect on male fertility, while 23.5% were unaware of it. Only 52% were aware of its' effect on reproductive hormones, and 57.8% knew that it would affect sperm quality. The peer factor had influenced 40.2% of the smokers, and 87.3% recommended awareness



campaigns more; only 17.6% had consulted health care professionals.

Conclusion: As a sizeable number of students knew that hookah smoking reduces male fertility, however, the knowledge gap is considerably high with respect to its' specific effect on male hormones and sperm quality. The high number of smokers among students and the peer pressure, as well as the belief that smoking hookah is safe, show the necessity of health education programs and smoking cessation programs at universities.

Keywords: Male fertility, Semen parameters, Reproductive function.

■ Paper 5:

Plant-Derived Silver Nanoparticles: A Novel Therapeutic Nanomedicine to Combat Opportunistic Pathogens

Abstract:

The increasing resistance of pathogenic bacteria and their tendency to form biofilms on medical instruments highlight the urgent need for novel antimicrobial approaches. This study focused on the eco-friendly synthesis of silver nanoparticles (AgNPs) using *Mentha longifolia* leaf extract and evaluated their antibacterial and antibiofilm efficacy against selected opportunistic pathogens. Aqueous extracts prepared from fresh *M. longifolia* leaves served as both reducing and capping agents in the green synthesis of AgNPs from silver nitrate. The successful formation of nanoparticles was indicated by a visible color shift and confirmed through UV-Vis spectroscopy, FTIR, SEM, and XRD techniques. The AgNPs produced were predominantly spherical, slightly agglomerated, and crystalline, with an estimated mean diameter of 43 nm. Their antibacterial potential was tested using the agar well diffusion method against *Escherichia coli*, *Klebsiella pneumoniae*, *Pseudomonas aeruginosa*, and *Staphylococcus aureus*. Notable antimicrobial activity was observed, especially at a concentration of 50 $\mu\text{g/mL}$. The antibiofilm effect was quantified via a microtiter plate assay, showing that the ML-mediated AgNPs substantially suppressed biofilm formation across all tested bacterial strains, with inhibition rates reaching up to 76%. Statistical analysis confirmed that these effects were significant ($p < 0.05$). Overall, the study demonstrates that

AgNPs synthesized via *M. longifolia* extract possess potent antibacterial and antibiofilm properties, offering a sustainable and effective alternative for combating infections linked to resistant and biofilm-producing bacteria

■ Paper 6:

Gene expression efflux pumps all from (NorA, NorC, NorB, LmrS, MepA) genes the treatment by coumarins in Staphylococcus aureus Isolated.

Saqar M*. khudhair1, Zainab. H. Abood1

1 Institute of Genetic Engineering and Biotechnology, University of Baghdad

Abstract:

Background: *Staphylococcus aureus* (*S. aureus*) is bacterium present in skin and upper respiratory tract. Although *S. aureus* is normal flora also become opportunistic pathogen cause many infection that difficulty treatment because of presence virulence gene, antibiotic-resistant strains especially MRSA and ciprofloxacin-resistant strains of *S. aureus* have emerged as important nosocomial pathogens among hospitalized patients. Therefore, this study was performed to evaluate the frequency of *norA*, *norB*, *norC*, *LmrS* and *MepA* efflux pump genes and their roles in resistance to ciprofloxacin in clinical isolates of *S. aureus* and effect of coumarins as anti-efflux pump .

Methods: total of 150 clinical samples (burun, wound, blood) were collected from patient attending in Al Zahraa Teaching Hospital and Al Kramah Teaching Hospital subjected to isolation of *S. aureus* strains. To detect the *S. aureus* isolates by molecular methods, the extracted genomic DNA of these isolates was submitted for amplification to detect the (16SrRNA) gene by the PCR method using species-specific primers for *S. aureus*. Antimicrobial susceptibility patterns were determined by the disk diffusion method using Clinical Laboratory Standard Institute (CLSI) guidelines. The antibiotic susceptibility test was performed to all identified isolates by Kirby-Bauer Disk Diffusion method using sixteen types of antibiotics. Among total clinical samples, 150 *S. aureus* strains were recovered.

Results: The results of the 12 are isolated (24%) were resistant to ciprofloxacin.

cin. and *S. aureus* isolates were identified by standard microbiological tests. DNA of these *S. aureus* isolates was submitted for amplification to detect the efflux pump gene (norA, norB, norC, LmrS and MepA) by the PCR technique using species-specific primers for *S. aureus*. Moreover (norA, norB, norC, LmrS and MepA) genes were found in 100%, 100%, 100% and 95, 90% of *S. aureus* isolates, respectively. Also, the total RNA of *S. aureus* was extracted by using Trizol purification kit and converted to cDNA that was submitted for further amplification to investigate the gene expression of (norA, norB, norC, LmrS and MepA) gene was done by using RT-PCR technique before and after the treatment of coumarin. The results explained the gene expression of (norA, norB, norC, LmrS and MepA) genes showed differences of values for the result of $2^{-\Delta\Delta Ct}$ ranging from 1.0 to (0.1, 0.08, 0.26, 0.23, 0.81, and 0.08), respectively (after being treated with coumarin 20 $\mu\text{g/ml}$). This result indicates a decrease in the growth rate of the bacteria to decrease the gene expression of (norA, norB, norC, LmrS and MepA) gene.

Conclusion: The results of this study showed that norA, norB, norC, LmrS and MepA efflux pump genes play an important role in resistance to ciprofloxacin in *S. aureus* strains and concluded that coumarin plays an important role as an anti-efflux pump.

Keywords: *Staphylococcus aureus*, Efflux pump, Coumarin, MRSA, Fluoroquinolone, and Anti-inflammatory.

■ Paper 7:

Applying the Machine Learning algorithms with Singular Value Decomposition in Colon Cancer Data

Afiya Raheem KHUDHAIR and Saja M. Hussein²

¹Department of economic, College, University of Thi-Qar, Thi-Qar, Iraq

²Department of statistic, University of Baghdad, Baghdad, Iraq

Abstract

Colon cancer classification is a common challenge in analysing high-dimensional genetic data. The aim of this research is to improve classification accu-

racy and reduce the number of variables using machine learning algorithms. Singular Value Decomposition (SVD) was applied to reduce high dimensionality, and the data were classified using several algorithms: Support Vector Machine (SVM), Random Forest (RF), Logistic Regression (LR), and Gradual Boosting Machine (GBM). This paper also proposed the use of hybrid algorithms combining genetic algorithms with SVM or RF (GA-SVM and GA-RF) without dimensionality reduction, as genetic algorithms do not require dimensionality reduction and are used as decision trees. The dataset used 62 observations and 2,001 binary classification variables (0 or 1).

The results showed that SVM and RF performed best in terms of classification accuracy and sensitivity, while GA-RF outperformed in specificity and false positive rate. Combining dimensionality reduction (SVD) with powerful generalization algorithms such as SVM and RF has contributed to achieving high accuracy and sensitivity.

Keywords: support vector machine, classification, the genetic algorithm, high dimensional data, Singular value decomposition (SVD).

■ Paper 8:

Long-Term Aluminum Chloride Toxicity: Histopathological and Residual Effects on Testicular Tissue in Rats.

Rawaa S. A. AL-Azawi¹, Sura A. Awadh², Ghusoon A. A. Alneamah³ and karrar Salih mahdi⁴.

^{1,2}Collage of Science – Department of Biology/ Al-Qasim Green University. babylon/ 51013, Iraq.

³Department of pathology and poultry diseases, College of Veterinary Medicine, Al-Qasim Green University. babylon/ Iraq.

⁴Department of Pathological analysis, College of Science, Al-Qasim Green University, Babylon,

Abstract:

Objective: The objective of this study is to determine the residual and histopathological effect of chronic Aluminum chloride toxicity on testes.



Material and Methods: The animals were divided in to 30 rats for each group as following: (GI): control group were treated orally by using stomach tube with distal water for 90 days (GII): treated orally with 100 mg/kg.b.w of aluminum chloride for 90 days. (GIII): treated with 200 mg/kg.b.w of aluminum chloride for 90 days. Animals will scarify after 90 days to determine the residual and histopathological effects on testes tissues. Also to determine the level of testosterone in the serum.

Result: The results were showed significant ($P \leq 0.05$) increase in the Aluminum chloride concentration in testes tissues especially in 90 day (8.08 ± 0.07 and 6.25 ± 0.10) respectively along the period of experiment. The level of testosterone in GII and GIII groups the result showed significant ($P \leq 0.05$) decreased in level of testosterone (4.17 ± 0.01 and 2.40 ± 0.15) respectively specially in 90 day . Histopathological sections for GII and GIII groups showed vacuolation of spermatogonia and the seminiferous tubules contain sloughing germinal cells with inflammatory cells infiltration. Also Thickening and congestion of blood vessels, decrease in spermatogenesis with atrophy of leydig cells ,with necrosis in germinal cells, also extensive thickening in tunica vaginalis due to infiltration of eosinophilic protenoius edema with apoptosis in spermatogonia. Also extensive fibrosis that replacement most of seminiferous tubules.

Conclusions: We concluded that the long lasting exposure to Aluminum chloride induce reproductive toxicity and reduce in fertility.

Keywords: Alcl3, chronic toxicity , Accumulation , testosterone, testes damage .

■ Paper 9:

Prevalence of Depression and Anxiety Among Medical Students at Al-Ameed University: A Cross-Sectional Study

Ali Tareq AbdulHasan^{1,2}, Satar Jabbar Rahi Algraittee^{1,2}, Lamyia A. Darwish^{1,2}, Ali Thoulfikar A. Imeer², Alaa Qasim Alawadi²

¹⁾ College of Medicine, University of Kerbala

²⁾ College of Medicine, University of Al-Ameed, Iraq

Abstract

Background: Medical students have a challenging academic, emotional burden that predisposes them to anxiety and depression, and this burden may compromise academic achievement and well-being in the long term. Knowledge of these mental health problems and their determinants can help to realize preventive strategies.

The objective of the study: to determine the prevalence rate of anxiety and depression in medical students.

Methods: A survey of fourth year medical students on a large university in Kerbala, Iraq was carried out cross-sectionally in an anonymized way. Generalized Anxiety Disorder-7 (GAD-7) and Patient Health Questionnaire-9 (PHQ-9) have been used in the measurement of anxiety and depression. .

Results: The sample size was 150 , 54.0% of respondents aged between 18 and 24 years, with 55.3% being female. The proportion of individuals practicing regular exercise, getting enough sleep and having active social life were reported at 49.3, 56.7 and 52.0 respectively. There was a high difference in males in terms of mean anxiety (7.55 ± 5.46 , $p = 0.0293$) and depression (8.02 ± 4.92 , $p = 0.0081$). Students of higher age (35 and older) were more anxious ($p = 0.0452$). Regular exercises, enough sleep and social interaction presented protective effects (all $p < 0.0001$). Gender, exercise, sleep and social engagement were validated as independent predictors using multivariate analysis.

Conclusion: Mental health of the medical students is closely determined by lifestyle factors. Vital measures that may help alleviate anxiety and depression include having regular exercise, rest and social support that may help increase a healthy academic atmosphere.

Keywords: Medical Students, Depression, Anxiety, Demographic factor, Lifestyle factors

■ Paper 10:

Diagnostic Value of Anticardiolipin and Antiphospholipid Antibodies in Recurrent Pregnancy Loss: A Cross-sectional Study

Zahra'a Abdul AL-Aziz Yousif¹, Farah A. Alwaely*², Reyam Riyam Lateef Khalaf

¹Ph.D. Medical Microbiology, Ibn Sina University of Medical and Pharmaceutical sciences, Baghdad, Iraq.

²Ph.D. Medical Microbiology, Department of Medical Microbiology, medicine college, Karbala University, Karbala, Iraq.

³ Ibn Sina University of Medical and Pharmaceutical Sciences, Baghdad, Iraq basic sciences, college of dentistry, Ibn Sina University of Medical and Pharmaceutical Sciences, Baghdad, Iraq.

Abstract

Background: Antiphospholipid syndrome (APS) is a common cause of recurrent pregnancy loss that is identified by the detection of antiphospholipid antibodies. However, the diagnostic value of anticardiolipin (aCL) and antiphospholipid (aPL) antibodies in women with frequent abortion is not fully recognized.

Objective: To examine the diagnosis accuracy of aCL and aPL antibodies (IgG and IgM) as biomarkers for APS in women suffering recurrent pregnancy loss.

Methods: This cross-sectional study comprised 100 women aged 18 to 45 years with recurrent pregnancy loss (≥ 2 consecutive or ≥ 3 non-consecutive losses before 34 weeks gestation). Serum levels of aCL and aPL antibodies (IgG and IgM) were evaluate using enzyme-linked immunosorbent assay (ELISA). Statistical analysis included descriptive statistics, correlation analysis, ROC curve analysis, and multivariate logistic regression.

Results: The mean antibody levels were: aPL IgG 4.12 ± 3.89 GPL, aPL IgM 4.34 ± 1.32 MPL, aCL IgG 4.02 ± 2.15 GPL, and aCL IgM 4.19 ± 3.85 MPL. Elevated antibody levels (>12 GPL/MPL) were found in 10% of patients, with aCL IgM showing the highest prevalence (7%). aCL IgM demonstrated superior diagnostic performance with an area under the curve (AUC) of 0.724 (95% CI: 0.615-0.833), sensitivity of 70%, and specificity of 77.8%. In multivariate

analysis, aCL IgM was the sole independent predictor of APS (OR=1.32, 95% CI: 1.08-1.61, $p=0.007$). Combined antibody testing improved diagnostic sensitivity to 90%.

Limitations: Single time-point antibody measurement; findings represent screening utility rather than definitive APS diagnosis per international criteria.

Conclusion: aCL IgM emerges as the most diagnostically valuable biomarker for APS in women with recurrent pregnancy loss. While individual antibodies show moderate diagnostic utility, combined testing enhances overall diagnostic performance. These findings support targeted screening strategies for APS evaluation in reproductive medicine.

Keywords: Antiphospholipid syndrome, anticardiolipin antibodies, recurrent pregnancy loss, biomarkers, APS screening, maternal health.

■ Paper 11:

Developing of Edible Protein-Based Films enriched with *Saccharomyces boulardii* and *Bifidobacterium*

Alyaa Hadi Al-Husseinawy¹, Ali R Mulakhdair², Zahraa Reasan Kareem shati²

¹ Department of dairy technology , College of Food Science, Al-Qasim Green University, Babylon, Iraq

² Department of Food health and Nutrition, College of Food Science, Al-Qasim Green University, Babylon 51031, Iraq

Abstract

Edible films and coatings have recently attracted notable attention because they combine low production cost with environmentally sustainable features. When enriched with probiotics, these edible materials present remarkable potential for improving food functionality. Co-administration of probiotics with in edible matrices has been shown to improve gastrointestinal colonization, increase probiotic viability, and promote health benefits. The experimental results demonstrated that the type and concentration of protein used in film formulation significantly affected the mechanical properties. Films composed of 7.5% of each of whey protein and casein achieved an optimal balance between

tensile strength and flexibility compared to 5% and 10% concentrations. Furthermore, the incorporation of *Saccharomyces boulardii* and *Bifidobacterium* strains improved film performance, with the 7.5% protein films reinforced with yeast exhibiting the highest Young's modulus (2480 MPa) and elongation (146%). Similarly, membranes enriched with *Bifidobacterium* showed excellent tensile strength and elasticity. These findings confirm that the addition of probiotics enhance both the mechanical integrity and structural network of protein-based membranes. Beyond structural benefits these membranes offer nutritional and health advantages underscoring their potential for use in smart food packaging preserve and improve food integrity .

Keywords: Edible films, protein-based coating, probiotics, food packaging

■ Paper 12:

The Relationship between Osteoporosis and Dental Concerns: Exploring the Impact on Oral Health

Taghreed H. Alsadoon¹, Amaal Al-nuaimy² and Waleed K.AHmeed³

1) Taghreed H. Al-Sadoon College of Dentistry University of Al-Iraqia

2) College of Dentistry University of Al-Iraqia

3) University of Al-Fallujah College of Medicine

Abstract

Osteoporosis leads to bone loss due to deficiency of minerals needed for building bone mass, which significantly influences dental problems by affecting the jawbone. The current study focused on mineral examination, which is consider an indicator for diagnosing the disease also the decayed, missing, and filling index (DMFT), in addition to the use of panoramic radiography for determine the mandibular bone density. The study was conducted on 64 patients with osteoporosis, aged (35 to 65) years (36 females and 29 males), who were selected from patients referred to the radiology clinic at the College of Dentistry at the University of Al-Iraqia. The study concluded that serum calcium, phosphate, alkaline phosphate (ALP) and vitamin D are predictors of bone mineral density (BMD), which is directly related to the decayed, missing

and filling index (DMFT) and thus contributes to the early diagnosis of osteoporosis using panoramic radiography to provide conclusive evidence of the abovementioned disease. Therefore, we recommend following up on elderly patients when some of their teeth are missing and conducting the necessary examinations before the disease progresses and causes fractures.

Keywords: Osteoporosis, Dental Concerns, Oral Health.

■ Paper 13:

Evaluation of rapid methods used to measure vitamin D

Taghreed H. Alsadoon¹, Zainab Abdul Wahed² and Noor Shaker³

1) Taghreed H. Al-Sadoon College of Dentistry University of Al-Iraqia University,

Baghdad, Iraq.

2) Zainab Abdul Wahed College of Dentistry University of Al-Iraqia, University,

Baghdad, Iraq.

3) Noor Shaker Al-Yarmouk University College of Pharmacy Baghdad, Iraq.

Abstract

Background: This study included (76) participated patients as Cross-sectional tested of Vitamin D₃ in blood from the patients seeking treatment at Al-Iraqia University dentistry college Baghdad's. The research was completed for three months, from February to the end of April (2022).

Methods: The study evaluates a new automated vitamin D point-of-care assay using Boditech i-CHROMA and BioZek color card tests, comparing their mean values with Roche Cobas 4000/e411.

Results: • Three methods for determining VitD₃ showed Cobas as the most sensitive instrument, that vit D was (20.9397±3.604) ng/mL the (median 20 with 12 minimums and 30 maximum).

• The I-CHROMATM analyzer result of the same sample gave a concentration (16.2921±3.763828.) ng/ml with median (14.91 minimum 10.09 and maximum

(25 • The biozek record the result of the same sample with a concentration (12.1447 ±3.98638631.) ng/ml with median (11minimum 9and maximum20) The Boditech I-CHROMATM and BioZek Color card tests have been surpassed by the Roche Cobas 4000/e411 which is more reliable and sensitive quantitative method for vitamin D measurement and advised for regular use.

Conclusion: The Cobas method is more accurate due to internal standard materials, the I-ChromaTM calculates vitamin D concentration and displays the result in ng/mL using a sandwich detection concept. While biozek rapid test can be used as a home and preliminary diagnostic test for screening the value of vitamin D whether it is sufficient, insufficient or there is actual deficiency, so this method can be applied for at home for fellow up the health.

Keywords: Boditech I-CHROMATM, BioZek Color card tests the Roche Cobas inadequate vitamin D measurement.

■ Paper 14:

The Environmental Impact On Waste Collectors Exposed To Solid Waste Vapours: A Biochemical And Haematological Study

Manaf A. Guma¹, Ola J Jubier², Khalid F.Al-Rawi³ Hazim A. J. Alhiti⁴, Syed Salman Ashraf⁵

1 and 2 Department of Environment, College of Applied sciences- Hit, University Of Anbar, Iraq.

3- University Of Anbar , Continuous Learning.

4 Hit General Hospital, General surgery and Cancer Clinic, Ministry of Health, Iraq

5 General practice, NHS, Leicester hospitals, UK.

Abstract:

The collection and recycling of the solid waste is a controversial issue worrying scientists and researchers due to the risk that this action poses. Air pollution is a cause of serious morbidity and mortality in the world. One of the most common air pollutants in waste directly affects the lungs and the respiratory system. The aim of this study is to assess the change in some blood parameters

of waste collectors and scavengers in Hit and Mohammadi cities in Iraq and compare the results with healthy controls. The study involved approximately 60 people whose were divided equally into three groups: smokers, non-smokers, and healthy control. The effect of cigarettes smoking is used to differentiate between the pollutant in the air caused by waste gases as opposed to the effect of smoking on people health and thus to avoid cofounding effects. The results showed a significant change in liver biochemical parameters for both waste collectors' group in comparison to the health control. This is clearly because of the inhalation of pollutant gases liberated from waste during the collections. Some immunity parameters were also significantly. Solid waste collection should be developed, and the workers protected of risks particularly in the developing countries like Iraq which does not regularly recycle the waste but collect all the waste together with no segregation.

Keywords: Waste collectors, health control, air pollution, blood examinations and respiratory infections.

■ Paper 15:

Comparative Analysis of *Escherichia coli* Strains isolated from IBS Patients, gut Disorders, and Healthy Subjects by Multilocus Sequence Typing in Diwaniyh city, Iraq.

Mohammad Hassan Mzher and Maitham Ghaly Yousiff

1*2. Biology Department / College of Science University of Al-Qadisiyah, Iraq

Abstract

Digestive disorders are among the most common medical problems, affecting the stomach, intestines, and colon. They may be functional, related to dysfunctional motility or regulation of the gastrointestinal tract, or organic, resulting from bacterial infections. However, it has not yet been determined whether the *E. coli* strains involved in the pathogenesis of irritable bowel syndrome (IBS) and gut disorders represent members of the intestinal commensal *E. coli*, or a distinct subset of pathogenic *E. coli*. This study aimed to identify *E. coli* isolated from patients with IBS, bowel disorders, and healthy participants



and study their molecular characteristics using multi-locus sequence typing (MLST) technique. 105 samples were collected under the supervision of a specialist doctor from patients who visited the Gastroenterology Center in Diwaniyah hospital, Iraq. 79 (75.2%) out of a total of 88 (83.8%) positive cultures were positive of *E.coli*, while there were 17(16.1%) negative cultures. five isolates were selected for multi-locus sequencing testing, using seven major Housekeeping genes (two isolate per study population pateaint except one isolate from healthy persons), with amplification of polymerase chain reaction followed by genomic sequencing. Sequence classification appear that the isolates were classified into diverse sequence types: ST34,ST48, ST218,ST11 and ST10. These results indicate that the *E. coli* strains causing irritable bowel syndrome and bowel disorders in Diwaniyah are genetically diverse. Further studies are required to better understand the epidemiology of these strains and their transmission using comprehensive molecular typing methods.

Keywords: *Eschershia coli* , IBS ,Gut disorder , MLST analysis

■ Paper 16:

Correlation of miRNA-199a with NF-κB SNP in Rheumatoid Arthritis in Iraqi Patients

Ahmed Shaker Dewan¹ and Syoof Khoman Alwan²

^{2,1}University of Al-Qadisiyah, College of Science, Department Of Biology, Iraq

Abstract:

This study aims to find the relationship investigate between a single nucleotide polymorphism (SNP) (rs4648068) in the NF-κB gene and miRNA-199a expression levels in rheumatoid arthritis (RA) patients in Iraq. This study aims to elucidate potential gene-genetic interactions that contribute to disease susceptibility and progression, providing a basis for future research and potential therapeutic interventions.

Blood samples were collected and divided into two groups: the first group consisted of 50 samples from Iraqi rheumatoid arthritis patients, and the second The group consists of 50 samples of healthy Iraqi individuals without the

disease as controls. The results revealed that patients carrying the NF- κ B (G/G) genotype exhibited significantly higher levels of miRNA-199a compared to those with the NF- κ B (G/A) genotype. Furthermore, a notable decrease in the allele of the A allele was observed among RA patients with low miRNA-199a expression relative to the control group, suggesting a potential protective role of this allele. Conversely, the G allele was more prevalent in patients with high miRNA-199a expression, indicating a possible genetic predisposition linked to increased disease activity. These findings point to a significant association between NF- κ B polymorphisms and miRNA-199a expression, which may influence RA susceptibility and severity. The study highlights the importance of genetic and molecular markers in understanding RA pathogenesis and may aid in developing personalized therapeutic strategies.

Keywords: *RA; NF- κ B; rs 4648068; SNP; miRNA-199; polymorphism*

■ Paper 17:

Assessment of Knowledge, Attitudes and Practices Related to Renal Nutrition among Hemodialysis Patients in Southern Iraq

Saman Agad Hashim ¹, Mohd Yusof Barakatun-Nisak ^{2,3} and Mohammed Younus Naji Al Atbee⁴

Department of Community Health, Technical Medical Institute in Basrah, Southern Technical University, Basrah, 61001, Iraq.

Department of Dietetics, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, Serdang 43400, Malaysia.

Institute for Social Sciences Studies, Universiti Putra Malaysia, Serdang 43400, Malaysia

Department of Nephrology, College of Medicine, University of Basrah, Basrah, 61001, Iraq.

Abstract

Purpose: End-stage renal disease (ESRD) requires specific dietary changes to manage the disease and improve quality of life. Understanding knowledge, attitudes, and practices (KAP) about nutrition among patients undergoing he-

modialysis (HD) is essential for their dietary adherence and treatment outcomes. This study aimed to evaluate KAP related to renal nutrition (KAP-RN) among HD patients in Southern Iraq.

Methods: A multicenter cross-sectional study involving 240 HD patients with a median age of 52 years (>57% were females) took place in Basrah. Patients were selected through convenience sampling. Using a pilot questionnaire, the study assessed the KAP-RN, focusing on phosphorus, potassium, and sodium intake. Descriptive statistics, t-test, chi-square, and one-way analysis of variance were achieved using SPSS version 25.

Results: Low knowledge (64.2%), negative attitudes (17.1%), and poor practices (28.8%) were prevalent among HD patients. Patients older than 40 showed significantly higher KAP-RN scores than younger patients ($p < 0.05$). Positive attitudes and better dietary practices were associated with higher education and no family history of ESRD ($p < 0.05$). Additionally, high income showed a positive correlation with high knowledge ($r = 0.165$, $p = 0.011$), positive attitude ($r = 0.160$, $p = 0.013$), and good practice scores ($r = 0.274$, $p = 0.000$), indicating the influence of socioeconomic status on dietary adherence.

Conclusion: The current study highlighted essential gaps in KAP-RN among HD patients, principally among younger patients and those with lower incomes, emphasizing the need for dietitian-led education to improve renal failure diet management.

Keywords: KAP study, hemodialysis, renal diet, renal failure.

■ Paper 18:

Altered serum levels of interleukin-4 and interleukin-6 in asthmatic patients: association with age, gender, and family history

Marwa H. Almuhamady, Hiba A. Malallah, Shahad Dakhil Khalaf, Heba Akram Mohsin, Walla Ali Mahdi and Lujain Adnan Khanger

Abstract:

Asthma is a complex autoimmune disorder that affects the lungs, characterized by chronic inflammation and airway hyper responsiveness. This study aimed to evaluate the serum concentrations of interleukin-4 (IL-4) and inter-

leukin-6 (IL-6) in asthmatic patients and explore their relationships with age, gender, and family history. Twenty-five asthmatic patients (13 females and 12 males) aged 10–50 years, attending the Allergy Center at Al-Sader Teaching Hospital in Al-Najaf, Iraq, from May to September 2024, were enrolled along with fifteen age- and sex-matched healthy controls. Serum IL-4 and IL-6 levels were measured using enzyme-linked immunosorbent assay (ELISA). The results showed a slightly higher prevalence of asthma among females (52%) compared to males (48%), and a positive family history was reported in 68% of patients. Importantly, serum IL-4 levels were significantly lower in asthmatic patients than in healthy controls (mean values: 4.69 vs. 15.28 pg/ml, $p < 0.05$), whereas IL-6 levels were markedly elevated in asthmatic patients (mean values: 49.32 vs. 6.75 pg/ml, $p < 0.05$). These findings indicate that altered levels of IL-4 and IL-6 are associated with asthma and may contribute to its pathogenicity, while also showing some correlations with demographic characteristics. In conclusion, the study highlights the predominance of asthma in females and those with a family history, and emphasizes that dysregulation of IL-4 and IL-6 may play a role in asthma development, suggesting these interleukins as potential biomarkers for disease assessment and management.

Keywords: IL-4, Asthma, interleukin-6, biomarkers, dysregulation.

■ Paper 19:

Rubella Infection Prevalence and Socio-Demographic Predictors in Women with Spontaneous Abortion in Najaf Governorate, Iraq.

*Qabas Neamah Hadi*¹, *Rana fadhil obaid*²

, **Dhuhah Hayder Abdul-Jawad*^{2,3}, and *Janan Nima Hadi*⁴

1. *Clinical Laboratory Department, Faculty of Pharmacy, Kufa University, Najaf City, Iraq.*

2. *Department of Medical Microbiology, Faculty of Medicine, University of Kufa, Najaf, Iraq.*

3. *Department of Medical Laboratory Technology, The Islamic University, College of Medical Technology, Najaf, Iraq. Clinical Laboratory Department, Faculty of Phar-*

macy, Kufa University, Najaf City, Iraq.

4. Al-Zahraa Center for Medical and Pharmaceutical Research sciences, Al-Zahraa University for Women, Karbala, Iraq.

Abstract

Background : Rubella virus infection during pregnancy can lead to a range of adverse outcomes, including miscarriage, congenital rubella syndrome, and fetal developmental anomalies. The risk is particularly high in women with insufficient levels of protective immunoglobulin G (IgG). Sero-prevalence of rubella antibodies is influenced by various demographic, immunological, and socio-environmental factors. **Objectives:** This study aims to assess the sero-prevalence of anti-rubella IgG and immunoglobulin M (IgM) antibodies among pregnant women in Najaf City, Iraq. It further seeks to explore the association between rubella sero-status and a history of abortion, in order to identify potential risk factors for rubella susceptibility in this population.

Method: The target population was (50) pregnant women (14-45yrs) with previous abortion were conducted in AL-Zahra Teaching Hospital in Najaf, from 5th December 2024 to 1st March 2025. The data are analyzed by Statistical Package for the Social Sciences software version 26 by Chi-square. All statistical analyses were conducted, and a p-value of less than 0.05 was considered statistically significant. **Results:** Fifty pregnancies females participated in the study. The mean age of participants was approximately 27.9 ± 6.57 years. Most of the participants were aged between 25- to 35- /years (60%), followed by those aged younger than 25 years old (26%), and those aged older than 35 years old (14%) of the total members. The Gestational age, in this study, was not significant with a p-value of $0.88 > 0.05$. At the time of sampling, approximately 78% of the women were in their first trimester of pregnancy, followed by 20% in the second trimester, and only 2% in the third .Out of the total females, 80% of them were suffering from abortion for the first time, while (20%) of them were suffering from recurrent abortion (14%) for the second time, (4%) for the fourth time, and (2%) for the fifth time. Most of the females were lived in urban area (74%), and housewife (76%). The study revealed a high proportion of IgM positivity (26%), while the overall prevalence of IgG was 94%.The present study revealed a strongly positive association between recurrent abortion and IgM positivity ($r=0.762 > 0.75$; $P=0.548 > 0.05$, not significant; $OR=1.77$; 95% $CI = 0.49-6.41$; $RR\%=68\%$) and a moderate positive association between Recurrent abortion and IgG positivity ($OR = 1.85$, 95%

CI = 0.24-14.14, RR%=70%, P=0.548>0.05, not significant). **Conclusion:** The study results indicate that most women are protected against rubella virus infection, as evidenced by the high prevalence of IgG antibodies. However, the notable proportion of IgM-positive cases suggests ongoing or recent infections, indicating that rubella remains endemic in the study area.

Key word : Congenital rubella syndrome , Rubella , Spontaneous abortion

■ Paper 20:

Association of *IL-17* and *TNF- α* Gene Polymorphisms with Susceptibility to Bacterial Pneumonia

Bashir H. Hassoun¹ & Ghaidaa J. Mohammed¹

College of Science / Department of Biology / University of Al-Qadisiyah

Abstract.

Pneumonia is commonly caused by infectious agents including bacteria, viruses, fungus, and parasites. Bacterial pneumonia, in particular, sometime can cause disease morbidity and mortality. Some infectious pathogens are known to cause pneumonia including *Klebsiella pneumoniae* and *Mycoplasma pneumoniae*. This research aimed to study the association of *IL-17* and *TNF- α* Genes polymorphism with susceptibility to the bacterial and *mycoplasma pneumonia* in patients infected with these organisms in Al-Diwanyiah teaching hospitals. This study was conducted from December 2024 until April 2025. Using biochemical and molecular tests, we identified 40 bacterial Pneumonia (*Klebsiella pneumoniae* 36 (31%) and 4 mycoplasma pneumonia (3.45%)) from sputum samples. The findings from this study demonstrated that there was a genetic variation in the host that influenced susceptibility to community-acquired pneumonia related specifically to the *IL-17A rs381905* and *TNF- α rs1800629* genes.

Keywords: Clinical specimens, Bacterial Pneumonia, Gene Polymorphisms



■ Paper 21:

Nanotechnology in Defeating Microbial Infections: Opportunities and Challenges

Worood Younis Azawi¹ and Imad Ahmed Rashid¹

Department of Medical Laboratory Technology, Balad Technical Institute, Middle Technical University, Iraq

Abstract

Due to the increasing prevalence of antimicrobial resistance, new treatments are needed worldwide. Nanotechnology offers potential alternatives for targeted nanodrug delivery, biofilm removal, and improved diagnostic sensitivity. This review discusses the promising aspects and limitations of various nanomaterials, their mechanisms of antimicrobial action (such as biocidal efficacy or inhibition of optical densities), pharmacodynamics both in vivo and in vitro, overall biosafety status, and the current challenges faced in translating these nanomaterials into clinical trials. Recommendations for future research and policy development are also included.

Key Words: Nanotechnology, Antimicrobial Resistance, Nanoparticles, Infection Control, And Drug Delivery.

■ Paper 22:

The Impact of Chronic Antibiotic Usage on Immune Homeostasis, Mechanistic Insights and Clinical Implications

Hussein Ali Mohammed AL-Ukaily

Department of Biology, College of Sciences, University of Wasit, Iraq

Abstract

Not only do antibiotics disrupt immune homeostasis in our bodies deeply and indirectly — a continuing threat to public health in practice — but and the same time: over there without external interference from without we can't go anymore by ourselves — with our own resources; with homeostasis of why till to this day we are made of? These drugs worked for both clinical bacteri-

al infections and effectively for broad-spectrum clinical bacterial infections. However upon their use microbiome was disrupted thus all proinflammatory and oncogenic agents released finally inducing chronic immune diseases. Chronic antibiotic exposure will change immunity- this is what our study investigates. This study will utilize cellular immune markers on viable cells, the trafficking of cytokines and microbiome measures plus their association with clinical outcome in de novo humans--studied longitudinally during hospitalization. Results of that yet-to-be-peer-reviewed study, but I think should this experiment be repeated on a larger scale and over a longer period, then all scientists around the world will agree that there is a loss of clinical constitution. This small number of patients does not reflect a trend, therefore. For another one of the analyses, we are investigating is to say that there is a correlation between long-term use of antibiotics and imbalance in the immune system. In addition, because samples of various immune cells (CD4+, CD8+, and B cells) and levels of a number of key cytokines (IL-6, TNF- α , IL-10, etc.) had been taken by ELISA techniques at enrolment, to look for differences over time during treatment, we examined these data in detail. Modern molecular diagnostic tools were used to study changes of the microbiome — the community of microorganisms that inhabit our bodies. Clinical data of long-term application of antibiotics on immune tolerance were collected and statistically analyzed. Among study subjects, we found higher pro-inflammatory and lower anti-inflammatory cytokines — typical of a chronic inflammatory condition in MVC patients. Natural immune defence loss showed as a hormonal high ratio of Subpopulations of proinflammatory cells versus anti-inflammatory cells of the same type of immune cell population and low-cell-ratio of Epithelial cell populations vs. diversity of microbial-wellness by way of seeing nondiverse populations of enriched bacterial species, as well as a dearth of biomass. These findings were statistically unambiguous. Put together, it would call (or inflict) immunologic morbidity (at least in elderly, read more) in the course of time which in turn would end up with inflammatory or autoimmune diseases in the long run. Several mechanisms based on bacterial adaptation or antibiotic resistance are discussed together with the implications for the future use of probiotics in clinical practice. While it strengthens the theory of prolonged probiotic exposure in the gut having a therapeutic benefit, these findings also underline the need to counterbalance the long-term systemic risks for the immune system posed by the very same antibiotic activities that seem to help the gut in the first place. It suggests that antibiotic prescribing guidelines should be re-evaluated, at the very least within the context of chronic illness, and that

they should be complemented with prophylactic measures, such as biological-therapies (e.g., episodic immune monitoring) to balance the impact of antibiotics on the immune system in the long run.

Keywords: Antibiotics, cellular immunity, cytokines, chronic inflammation, clinical implications. microbiome,

■ Paper 23:

Antimicrobial Susceptibility and Prevalence of Multidrug-Resistant *Klebsiella pneumoniae* in Pediatric Patients in Karbala, Iraq: A Two-Year Retrospective Study.

Hussein Abd Ali Mohammed Sadeq Al Her ¹, Al-Shalah, Saif A.J. ²Ekhlas Abdulameer Hameed Alazzawi ³

1 College of Pharmacy, Karbala University, Karbala, Iraq. hussein.abdali@uokerbala.edu.iq

2 Technical Institute in Babylon. Al-Furat Al-Awsat Technical University. saif.nori@atu.edu.iq

3 College of Pharmacy, Karbala University, Karbala, Iraq.

Abstract

Background: *Klebsiella pneumoniae* is a major pediatric pathogen causing infections such as urinary tract infections, pneumonia, neonatal sepsis, and meningitis, with heightened risk in children due to immune immaturity and hospital exposure. Its pathogenicity is driven by key virulence factors, notably the polysaccharide capsule and biofilm formation, which enhance survival and persistence in host and healthcare environments. The rise of multidrug-resistant strains, mediated by extended-spectrum β -lactamases and carbapenemases, poses a critical challenge.

Aim: The aim of this study was to look backward at the prevalence and patterns of antibiotic resistance of *Klebsiella pneumoniae* bacteria, which were isolated from various clinical samples in pediatric cases at Karbala Children's Hospital between 2022 and 2023.

Methods: This retrospective, cross-sectional study examined pediatric *Klebsiella pneumoniae* infections at Karbala Children's Hospital, Iraq, involving

68 cases from 2022–2023. Data included clinical samples, patient demographics, and antibiotic susceptibility profiles determined by Kirby-Bauer testing, with resistance rates analyzed statistically. The study also identified multidrug resistance, defined as resistance to three antibiotic classes.

Results: In 2022, Klebsiella-associated pediatric infections showed a nearly equal distribution between males (51.6%) and females (48.4%), with a more pronounced male predominance (56.8% vs. 43.2%) in 2023, resulting in a male-to-female ratio of approximately 1.2:1. The majority of cases (47.1%) occurred in infants under one year, with decreasing incidence in older age groups. Urine samples were the most common clinical source, accounting for 64.7% of isolates, predominantly from urinary tract infections. Antibiotic resistance analysis revealed high susceptibility to certain antibiotics like amikacin and nitrofurantoin, while resistance to multiple antibiotics was observed in 23% of isolates, with some strains resistant to up to 13 antibiotics.

Conclusion: According to the study, pediatric Klebsiella infections are more common in men, with infants younger than one year old being the most affected age group. Urine samples confirm that the main clinical manifestation is urinary tract infections. The majority of isolates are still susceptible to drugs like amikacin and nitrofurantoin, but antibiotic susceptibility testing shows high resistance to several antibiotics. The necessity of continuous monitoring and proper antimicrobial stewardship in this population is highlighted by the high frequency of multidrug resistant strains.

Keyword

Klebsiella pneumoniae, antibiotic resistance, pediatrics, multidrug resistance, and antimicrobial susceptibility test.



■ Paper 24:

Estimation level of interleukin 8 in Iraqi patients have Crohn's disease under biological treatment

Hussein Salmaan Qasim¹, Al-Hassan Talib Waly²

¹Department of Microbiology, College of Science, Al-Karkh University for Science, Baghdad, Iraq

²Department of radiology Techniques, College of Health and Medical Technologies, Middle Technical University, Baghdad, Iraq

Abstract

Background: In order to find the relationship between Crohn's disease (CD) and interleukin 8 level are disorders which primarily affect the digestive system. Ninety samples were taken for people aged (20-68) years for the period from October 2024 to March 2025, divided into three groups. Out of all the patients, three groups were formed: The first group consisted of thirty patients who tested positive for Crohn's illness. Group 2: As a control group, thirty people who seemed to be in good health were included. A group of thirty people with Crohn's disease were included in a biological treatment. All studied groups were carried out to measure interleukin 8 level by Enzyme Linked Immunosorbent Assay (ELISA) technique. Significant differences are shown by the statistical analysis ($p < 0.05$) in interleukin 8 level in the positive group. It was concluded Crohn's disease could be a factor in increase the interleukin 8 level.

Keywords: Crohn disease, Interleukin 8, gastrointestinal tract.

■ Paper 25:

Mitigative Effects of Topical Carnosol on Imiquimod-induced Model of Psoriasis in Mice

Alaa Hamza Abbas^{1*}, Ahmed F. Abed Mansoor², Abdulla K Raheem³, Hayder Ridha-Salman⁴, Firas Ghafil Abbas⁵, Ahmed R Abu Raghif⁶, Fadhil Faez Sead⁷, Zahraa Hamza Abbas⁸, Qassim A. Zigam⁹, Salim K. Hajwal¹⁰, Raad Saad Luty¹¹, Hayder Abdul Hussein Abass¹².

^{1*,3,4,9,10}) Department of Pharmacology, College of Pharmacy, Al-Mustaqbal University, Babylon, Iraq.

⁵)Al-Zahrawi University College, Department of Pharmacy.

⁸) Diwaniyah Health Directorate, Ministry of Health, Diwaniyah, Iraq.

²) Department of Pharmacology and Toxicology-College of Pharmacy-National University of Science and Technology, Thi-Qar, Iraq.

⁷) Chemistry Department, College of Dentistry, The Islamic University, Najaf, Iraq.

^{6,11}) Department of Pharmacology, College of Medicine, Al-Nahrain University, Baghdad, Iraq.

¹²) University of Al-Qadisiya, College of Science, Department of Pathological analyses, Diwaniyah, Iraq.

Abstract

Psoriasis is a chronic systemic disease characterized by immune mechanisms, environmental factors, and genetic susceptibility. It affects more than just the skin and is known to have a significant systemic compromise due to its associated comorbidities. Pro-inflammatory cytokines primarily cause these comorbidities. Carnosol is an ortho-phenolic diterpene composed of an abietane carbon skeleton with hydroxyl groups at C-11 and C-12, as well as a lactone moiety across the B ring. Carnosol is a naturally occurring polyphenol that is created by the oxidative breakdown of carnosic acid and is present in many plants, including rosemary. It has been displayed to have antioxidant, antimicrobial, antidiabetic, and cancer-fighting properties.

Objectives: to investigate the possible influence of two different concentrations of carnosol emulgel on psoriasis induced via imiquimod in mice.

Methods: dividing 40 mice into five groups (8 mice for each group). All groups gated imiquimod to induce psoriasis (except group I) for 8 days. The



induction group (Group II) received imiquimod cream for 8 days. The rest of the groups gated calcipotriol 0.005% ointment, carnosol 3% emulgel, and carnosol 5% emulgel, respectively, once daily for 8 days, this was done after the four-hour induction period by imiquimod.

Results: Topical carnosol displayed significant anti-psoriatic action, lessening Psoriasis Area Severity Index (PASI) scores and upgrading histological changes with imiquimod application. Furthermore, it increased anti-2

inflammatory biomarkers IL-10 and suppressed TGF- β . It also lessened inflammatory biomarkers, including TNF- α , IL-17, IL-1 β , IL-23, and VEGF, and modulated oxidative biomarkers (malondialdehyde and catalase).

Conclusion: Through its anti-inflammatory, antioxidant, and immunomodulatory effects, topical carnosol has substantial anti-psoriatic action against imiquimod-induced psoriasis. Also, carnosol has a restorative effect on the histopathological alterations of mice's skin induced by imiquimod.

Keywords: carnosol, imiquimod-induced, inflammation, topical effect, immune-mediated diseases, and antipsoriatic therapy.

■ Paper 26:

Exploring the Diagnostic Utility of Apelin and Calcitonin Gene-Related Peptide in Patients with Coronary Artery Disease: A Case-Control Pilot Study

Mustafa M. Khalil¹, Nahlah F. Makki²

¹Department of Chemical Engineering, College of Engineering, Kufa University, Najaf, 54001, Iraq.

²Department of Chemistry, College of Science, Kufa University, Najaf, 54001, Iraq.

Abstract

Background: Coronary artery disease (CAD) is one of the leading cardiovascular disorders, primarily caused by atherosclerotic narrowing of the coronary arteries, which results in reduced blood flow and oxygen delivery to the myocardium. Among the regulatory factors of vascular homeostasis, calcitonin gene-related peptide (CGRP) and apelin are recognized as potent va-

sodilatory peptides with critical roles in maintaining vascular tone, improving myocardial perfusion, and enhancing endothelial function. Dysregulation of these pathways has been implicated in the pathogenesis of CAD, suggesting their potential utility as biomarkers and therapeutic targets. Exploring CGRP and apelin as predictive tools for CAD may provide valuable insights into early diagnosis, risk stratification, and novel treatment strategies. This study aims to investigate the predictive value of apelin and CGRP in the context of coronary artery disease. **Methods:** This study enrolled 90 male participants, divided into two groups: 45 patients diagnosed with CAD and 45 age-matched healthy controls. Routine biochemical assays were performed using standard colorimetric techniques, while serum levels of apelin and CGRP were quantified using ELISA. **Results:** This study revealed decrease in CGRP, Apelin, magnesium, and HDL. In contrast all the other markers showed an increase in levels, and the results revealed an increase in the anthropometric measurements, except for age and BMI. **Conclusion:** These results highlight the excellent potential of Apelin to diagnosing CAD.

Keywords: CAD, CRP, Troponin, WHtR, CGRP, WHR

■ Paper 27:

Multidrug-Resistant Antimicrobial Effects of Red Pepper Seeds Nanoparticles against *Klebsiella Pneumoniae* and *Staphylococcus Aureus* Bacteria

**Asseel M.M¹. Habh, Rasha Mohamed Sajet Al-Oqaili¹, Suhair Sh. AL-Siraj¹
and Huda Zuheir Majeed¹**

¹Department of Biology, College of Sciences, Mustansiriyah University, IRAQ.

Abstract

Bio-nanoparticles are manufactured using the metabolites of microorganisms such as viruses, bacteria and true fungi including yeast and algae. The objective of this research was to determine the red pepper seeds plant extract and silver nitrate nanoparticles effect as an antibacterial on *Klebsiella pneumoniae* and *Staphylococcus aureus* bacteria. The red pepper seeds plant extract, silver

nitrate nanoparticles and *Klebsiella pneumoniae* and *Staphylococcus aureus* bacteria were used in the study. The silver nanoparticles were characterized using UV-Vis spectroscopy, transmission electron microscopy and infrared spectroscopy. The results showed the superiority of silver nanoparticles in an inhibiting the growth of *Klebsiella pneumoniae* and *Staphylococcus aureus*. The diameter of the inhibition zone of red pepper extract on *Staphylococcus aureus* was 21 mm, while the diameter of the inhibition zone of silver nanoparticles was 29 mm. The diameter of the inhibition zone of red pepper extract was 16 mm and silver nanoparticles on *Klebsiella pneumoniae* was 22 mm. The *Klebsiella pneumoniae* was resistant to Colistin (100%), Amikacin and Imipenem (84%). While *Staphylococcus aureus* showed resistant to Amikacin (94.28%), Colistin (71.42%), Piperacillin (12%). The red pepper extract and silver nanoparticles are an effective strategy that may contribute to control the growth and spread of microbes.

Keywords: Red pepper seeds, *Capsicum annum L.*, *K. pneumoniae*, *S. aureus*, Silver nanoparticles, Resistant, Inhibition.

■ Paper 28:

Bacteria Associated with Infertility Cases in Basra Governorate

Hajer A. Hajem ^{*1)}, Ghaida'a J. Al-Ghizzawi ¹⁾

¹⁾University of Basrah, College of Education for Pure Sciences, Department of Biology, Iraq.

Abstract

This study investigated the role of bacterial infections in infertility among couples in Basra Governorate. Out of 100 clinical samples (50 semen and 50 vaginal/cervical swabs), 85% showed bacterial growth, with Gram-positive bacteria (especially *Staphylococcus aureus* and *Staphylococcus epidermidis*) predominating. *Escherichia coli*, *Enterococcus faecalis*, *Acinetobacter lwoffii*, and *Proteus mirabilis* were also detected. Antibiotic susceptibility testing revealed high sensitivity to carbapenems, aminoglycosides, and fluoroquinolones, but notable resistance to penicillins and cephalosporins, particularly in *E. coli* and *P. mirabilis*. This study provides new insights by highlighting the predominance of Gram-positive pathogens and the emergence of resistant strains in Basra's infertile population, emphasizing the need for routine microbial screening and region-specific antibiotic policies.

Keywords: Antibiotics, Bacterial pathogens, Biochemical tests, infertil-

ity.

■ Paper 29:

Immunological Detection of Rubella Infection and Measuring the Level of Interleukin-6 and Interferon- γ in Women with Abortion

Ghaidaa Jihadi Mohammed^{1*}, Mazin Shaker Jabber^{2}, Habeeb Waseel Kadhim^{1***}**

¹Biology Department ,Science College, Al-Qadisiyah University ,Iraq

² Al-Diwaniyah Health , Ministry of Health, Iraq

Abstract

Infections with Rubella virus are considered risk during gestation, and it is one of the aetiologies of abortion. The study aimed to detect Rubella infection and the level of interleukin-6 and interferon- γ in women with abortion of Al-Diwaniyah city , Iraq. The study was achieved on 42 aborted women and 26 healthy pregnant women as a control . Patients age was 16-43 years, (27) from rural and (15) from urban who attending Maternity and children hospital in Al-Diwaniyah city, during January to June 2024. Serological detection of Rubella antibodies and the level of IL-6 and INF- γ were carried out by ELISA. The results showed 15 (35.7%) of patients were seropositive for IgM , 37 (88.1%) for IgG, and 10 (23.80%) were for both IgM and IgG. The distribution of Rubella IgM according to age, showed the highest rate(58.3%) was in age ≥ 30 years, while (100%) for IgG were in age < 20 years. The high frequency of Rubella antibodies was from rural (93.3%) for IgG and (46.7%) for IgM, and the higher rate of IgG (100%) was for women with 3 or 4 abortions and (100%) for IgM in women with 4 abortions . IL-6 levels showed a significant increase in patients (40.91 ± 7.95) compared to control (19.58 ± 4.29).Also, the level of IFN- γ was higher in patients (51.95 ± 8.67), in contrast to control (27.91 ± 4.13). The present study showed an association between Rubella infection and occurrence of abortion. As well, the increase in the levels of IL-6 and IFN- γ refers to their role in immune response to viral infection.

Keywords: Rubella, Abortion, Antibodies, IL-6, IFN- γ

■ Paper 30:

Location and homogeneity of nodules as a risk factor for thyroid cancer

Mariam Ahmad Ali

Ministry of Education – Educational Directorate Babylon - Ur Intermediate School for Girls, Iraq

Abstract

Introduction: Incidence ratio of thyroid cancer has dramatically increased during the last twenty years over the world.

Aim : Investigate whether the homogeneity and location of thyroid nodules have an affected role as prediction tools for determining thyroid cancer.

Methodology: This study relies on the collection and interpretation of ultrasound images and clinical tests from 459 patients (396 females and 63 males) who underwent evaluation for thyroid nodules.

Results: Mean patient age was 36 ± 16.84 (20–70) years, and the majority were women (n=396, 86%). A total of 459 patients were analyzed, 39 (8%) of which were malignant. Thyroid nodule location was an independent risk factor in predicting thyroid cancer, a higher prevalence of malignant nodules was in right lobe 66.66% of all malignant samples with Odds ratio 0.66, Risk ratio 0.83 and Chi-square was 4.435 (sig 0.035), followed by left lobe with a prevalence percent 33.33% from all malignant samples, odds ratio 0.66, risk ratio 0.83, and chi-square 1.394 (sig 0.235). and no malignant nodules have been recorded in the isthmus part during the current study.

Conclusion: Thyroid nodule location is an independent risk factor in predicting the risk of thyroid cancer. Right nodules carry the highest risk of cancer depending on the results of the current study, but remaining the echogenicity, nodules shape, margins, and calcification are the affected tools for assessment of risk for thyroid cancer..

Keywords: Thyroid cancer, Nodules, Malignant, Right lobe, Left, Isthmus, location.

■ Paper 31:

Structural Characteristic and Antibacterial Evaluation of Green-Synthesized α -Fe₂O₃ Nanoparticles from Ziziphus Leaves Extract

Saba Abdulmunem Habeeb¹, Rasha Hadi Saleh², NOOR HADI AYSA³

¹Department of Pharmaceutical Chemistry, College of Pharmacy, University of Babylon, Al Hillah, Babil Governorate 51002, Iraq.

^{2,3}Department of Clinical Laboratory Sciences, College of Pharmacy, University of Babylon, Al Hillah, Babil Governorate 51002, Iraq.

Abstract

In this study, green chemistry was employed to synthesize nano-oxides, specifically green α -Fe₂O₃ NPs, using Fe₂Cl₃ as the source of Fe⁺³ ions and *Ziziphus spina-christi* leaf extract as a stabilizing reagent under controlled pH and temperature conditions. The characteristics of green α -Fe₂O₃ NPs were evaluated using X-Ray Diffraction (XRD), Fourier Transform InfraRed (FT-IR) technology, Scanning Electron Microscopy (SEM), and Energy-Dispersive X-ray (EDX) spectroscopy. The average particle size determined from the XRD pattern was 23.83 nm, whereas the average particle size obtained from SEM analysis was 31.6 nm. The antibacterial effect of α -Fe₂O₃ NPs was assessed at several concentrations against *Staphylococcus aureus*, *Enterococcus spp.*, *Escherichia coli*, and *Klebsiella spp.* Bacteria use the well diffusion method. Antibacterial tests showed that α -Fe₂O₃ nanoparticles exhibited concentration-dependent inhibition; these nanoparticles exhibited an effect at higher concentrations against all tested bacteria, with the highest activity seen against *S. aureus* (20 mm inhibition zone). *E. coli* displayed moderate sensitivity, whereas *Klebsiella spp.* Showed the least susceptibility. These findings point out the advantages of α -Fe₂O₃ nanoparticles as promising antimicrobial agents in the fight against multidrug-resistant pathogens.

Keywords: Green chemistry, α -Fe₂O₃ NPs, structural properties, Ziziphus, antibacterial activity

■ Paper 32:

Investigation of Biofilm-Producing Genes and Antifungal Susceptibility of *Candida albicans* Isolated from Vaginal Infections

Saif Hasan Issa

Imam Al-Sadiq University - Department of Health and Medical Technologies

Abstract

Introduction: *Candida* is one of the one of the normal flora of skins, mouth, vagina as well digestive system. One of the most critical pathogenic agents of this yeast is biofilms synthesis and drug resistance genes. *Candida* biofilm-related infections include the vulvovaginal. **Methodology:** In the present study the molecular methods and drug sensitivity evaluation tests with the microbroth dilution method were applied to study *Candida albicans* at the genomic level, and identify biofilm-forming genes from the ALS, hwp family, and investigate the expression of drug resistance genes such as CDR, MDR and ERG11. **The Results:** The outcomes of the drugs sensitivity tests with microbroth dilution method based on CLSIM27S4, the MIC₅₀ of *C. albicans* isolates to Ketoconazole drug was 0.032 µg/ml, while for Fluconazole, *Candida albicans* was 0.063 µg/ml. Based on the results of M-PCR for 30 *Candida albicans* isolates, the frequencies of ERG11, MDR and CDR1 genes was equal to 1 isolate (3.34%), 4 isolates (13.34%) and 9 isolates (30%), respectively. Also, the frequency of ALS4, ALS3 and HWP genes in 30 isolates of *Candida albicans* were 7 isolates (23.33%), 4 isolates (13.33%) and 1 isolate (3.33%), respectively. **Conclusion:** The obtained results showed an association between expressions of biofilms-forming genes, drug resistance genes, especially CDR, and resistances to fluconazole in *Candida albicans*

Keywords: *Candida albicans*, M-PCR, ALS3, ALS4, HWP, CDR, MDR, ERG11, and biofilm

■ Paper 33:

In vivo induction of different venous thromboembolism by use of DC electrical shock on jugular vein endothelium

Esraa A. Qoryi¹, Hanady Muhdy¹, Rafid Doulab¹

College of Pharmacy, University of Basrah

Abstract:

Venous thrombosis is a main clinical worry with restricted experimental models close to human-like thrombus formation. This study focuses on a novel rabbit model that uses direct electrical stimulation to induce internal jugular vein injury to form thrombosis in internal organs.

Twenty-one male New Zealand White rabbits were subjected to jugular vein thrombosis induction via exposure to DC electrical stimulation, with D-Dimer assays to confirm thrombosis. Histopathological analysis of target organs was conducted.

Microscopy manifests thromboembolic changes in lungs, heart, and brain, confirmed by D-Dimer positivity corresponding to DC electrical current grade exposure: 6V/60s (lung, +), 12V/120s (heart, +++), and 24V/180s (brain, +++). These results demonstrate a stress- and time-dependent induction of deep vein thrombosis with systemic thrombus-occlusive effect.

Conclusion: Direct stimulation of DC current can induce deep vein thrombosis in rabbits related to voltage- and duration-dependent manner, where lower voltage and shorter exposure (6 V, 60 s) primarily affect the lungs, moderate settings (12 V, 120 s) target the heart, and higher voltage with longer duration (24 V, 180 s) affect the brain. This relationship enables controlled induction of thromboembolism (TE) in specific organs, making this model valuable for studying targeted vascular injury and therapeutic interventions.

Keywords: venous thromboembolism, jugular vein, D-Dimer

■ Paper 34:

Association between Serum Levels of Interleukin -17A and Asthma characteristics in Children

Masara Hashim Alaraji¹, Mariam Zuhair Almusawi², Hawraa Fadhil Abbas³, Haidar A.N. Abood^{4 a,b}, Suhaila Rayhaan⁵

1) Karbala teaching hospital for children, Kerbala, Iraq

2) Karbala teaching hospital for children, Kerbala, Iraq

3) Department of Biochemistry, College of Medicine, University of Kerbala, Kerbala, Iraq

4a) Karbala Teaching Hospital for Children, Kerbala, Iraq.

4b) Department of Pharmacology, College of Medicine, University of Kerbala, Kerbala, Iraq.

5) Department of Biochemistry, College of Medicine, University of Kerbala, Kerbala, Iraq

Abstract

Background: Asthma A common chronic inflammatory condition in children, characterized by variable airway obstruction and recurrent exacerbations. Interleukin-17A (IL-17A), a pro-inflammatory has been implicated in asthma pathogenesis, airway remodeling, and steroid resistance. highlighting the potential challenges in treating this disease. The study aimed to investigate the serum levels of IL-17A in asthmatic children and to explore its association with various sociodemographic and clinical factors, including asthma severity, family history of asthma, and response to inhaled corticosteroids to better understand its potential role in disease characterization.

Methods: This is a cross-sectional study in Karbala teaching hospital for children at asthma out-patient clinic was performed with 90 asthmatic patients aged 7 months to 16 years. Structured questionnaires were used to collect clinical data, such as medication regimen, family history, control level, and severity of asthma. Serum samples were collected to detect IL-17 in by using ELISA assay kit.

Results: The mean serum IL-17A level was 1.31 ± 1.57 pg/mL. IL-17A levels were higher in moderate asthma (1.523 ± 2.002 pg/mL) and well-controlled

asthma (1.692 ± 2.414 pg/mL). notably, a significant correlation ($p = 0.03$) was found between increased IL-17A levels and a family history of asthma. Males, urban residents, and children without pets or tobacco smoke exposure had slightly higher IL-17A levels, though differences were not statistically significant.

Conclusion: Interleukin-17A levels were higher in patients with moderate asthma. Elevated IL-17A was associated with positive family history of asthma. These results suggest that IL-17A may be a biomarker for pediatric asthma.

Keywords: Asthmatic Children, IL-17A, asthma severity, ICS, Family history

■ Paper 35:

Clinical & Biochemical of Foot temperature in diabetic patients

Raghda W Khalid

Department of Biology, College of Sciences, University of Kirkuk

Abstract

Elevated foot temperature is a frequently observed symptom among individuals with diabetes, commonly attributed to peripheral neuropathy. In contrast, impaired kidney function represents a major chronic complication associated with diabetes. This study focuses on evaluating the influence of diabetes on renal function and its potential link to increased foot temperature. Participants included individuals diagnosed with either type 1 or type 2 diabetes, ranging from 25 to 75 years of age. Blood samples were collected and processed using gel tubes for serum isolation through centrifugation at 4000 rpm to facilitate biochemical analysis. Additional blood samples were preserved in EDTA tubes for the assessment of glycated hemoglobin (HbA1C). The study involved a total of 100 participants, comprising 75 diabetic patients and 25 healthy individuals serving as the control group. Investigations included quantifying accumulated blood glucose and assessing renal function parameters. The findings reveal a significant correlation between diabetes and elevated foot temperature, which may be linked to disruptions in kidney function. Statistical analysis demonstrated a p-value of less than 0.02 when comparing diabetic individuals to those in the healthy control group. Conclusion declining kidney function is a significant chronic complication of diabetes. The relationship between the two is evident in that chronic disruption of blood sugar control

leads to microvascular damage.

Keywords: Diabetes, heat, Urea, insulin, HbA1C

■ Paper 36:

Bacterial Etiology and Antibiotic Resistance in Tonsillitis Patients - Al-Najaf, Iraq

Angham Najah AlKhafaji¹, Ketam Kadom Khudair², Khitam Fadhil Abbas³

1&2) Kufa Technical Institute, Al-furat Alawsat Technical University, 31001 Al-kufa Al-najaf Iraq

3) Faculty of Medicine, University of Kufa, Najaf, Iraq ³.

Abstract:

Background: Bacterial Tonsillitis is a disease of the tonsils caused by bacteria and affects with people of all ages. The aim of this study was to detect of pathogenic bacteria for tonsillitis and to focus on the antibiotic susceptibility patterns of bacterial isolates obtained from hospitalized patients with tonsillitis.

Methodology: In this study, a total of seventy-seven patients were collected, comprising a of forty-nine males (63.6%) and twenty-eight females (36.4%). A considerable number of patients ranging from 1 to 70 years old, where the commonly affected age group was 21–30 years, representing 18 with bacteria infect and 12 without bacteria infect of cases compared to other age groups. The present study conducted an investigation of 34 bacterial isolates to determine their types and susceptibility patterns.

Results: The results indicated that the most prevalent bacterial isolates were *Streptococcus* sp represent (38.24%), followed by *Klebsiella* sp (29.41%), *E. coli* and *Proteus* sp (8.82%), *S. aureus* and *Pseudomonas aeruginosa* (5.88%) and *Enterobacter* sp (2.94%). The MDR of *Streptococcus* sp with highest resistance of antibiotics represent 13 (86.7%), while gram negative bacteria represent *klebsiella* sp with highest resistance of antibiotics resistance 10 (52.6%).

Conclusion: Recurrent tonsillitis was the most commonly encountered infection, with the pathogenic bacteria being *Streptococcus* sp. The issue of bacterial resistance to commonly used antibiotics was apparent among Gram-positive and Gram-negative isolates in the present study.

Keywords: Tonsillitis, Vitek 2 System, antibiotics, multidrug-resistant bacteria.

■ Paper 37:

Evaluation of Biochemical and Molecular impact of endothelial dysfunction on headache characteristics in patients with migraine

Ahmed Faisal Obed¹, Hasan Najat A², Wasan I. Al-Saadi³, Farqad Hamdan⁴, Abdulkareem K. Jabir⁵

1)(BSC Pharmacy, PhD in Clinical Biochemistry) University of Babylon, Hammurabi College of Medicine

2) (MB ChB, PhD in Clinical Biochemistry) Department of Chemistry and Biochemistry, College of Medicine, Alnahrain University, Baghdad, Iraq.

3) (MB ChB, F.I.B.M.S. Radiodiagnosis) Department of Radiology, College of Medicine, Alnahrain University, Baghdad, Iraq.

4) (MB ChB, PhD in Medical Physiology) Department of Physiology, College of Medicine, Alnahrain University, Baghdad, Iraq.

5) (MB ChB, F.I.B.M.S. Neurology) Department of Internal Medicine, College of Medicine, Alnahrain University, Baghdad, Iraq.

Abstract

Backgrounds and aims: Migraine pathophysiology is still not clearly identified, the endothelial dysfunction hypothesis has to be extensively clarified since it may have an impact on the treatment protocols and life style modification for the sufferers.

Objectives: Estimate the role of endothelial dysfunction in the pathogenesis of migraine compared to non-migraine headache and healthy subjects, also delineate the factors that may influence the level of the endothelial dysfunction.

Material and Methods: The study includes 82 individuals who suffer from headaches and 40 healthy volunteers who are matched in terms of age and gender. The assessment of endothelial dysfunction involved the quantification of flow-mediated dilation, intima media thickness, the presence of endothelial nitric oxide synthase (eNOS) gene polymorphism (rs17999), and its influence on eNOS enzyme concentration, as well as the measurement of blood levels

of nitric oxide and uric acid. The migraine headache criteria were assessed to demonstrate their impact on the pathophysiology of the disease.

Results: There were significant decrease in flow mediated vasodilation of the brachial artery and the significant lower intima media thickness of the carotid artery, and serum level of endothelial nitric oxide synthase in migraine group compared to non-migraine headache and control group and it may in part reflect the lowered level of nitric oxide by high serum uric acid with positive correlation of these two parameters. The GG genotype of the eNOS was associated with higher risk compared to TT genotype to have migraineous or non-migraineous headache.

Conclusion: The study suggests a role of endothelial dysfunction in the pathogenesis of migraine with the GG genotype of eNOS gene as a distinct risk factor for developing migraine.

Keywords: Migraine, Doppler ultrasounds; endothelial dysfunction; endothelial nitric oxide synthase; intima media thickness; uric acid; genotyping.

■ Paper 38:

The Correlation of Insulin Resistance with Nerve Growth Factor and Claudin-5 in the Progression of Neuropathy in Diabetic Iraqi Patients

Shaymaa Mohammed

Abstract

Background& Objectives: Type 2 Diabetic Mellitus is a type of diabetes and one of the chronic .This aimed to evaluate the role of NGF and CLDN-5 in the progression of DPN in patients with type 2 DM.

Material and Methods: At the Specialized Center for Endocrinology and Diabetes, Al-Rusafa, Baghdad, Iraq collect the samples including 97 patients (40-70) years) with type-2 DM (55 patients only type-2 without complications are classified to duration: n=28 <5 years duration as G1group (7 male 25% and 21 female75%), n= 27 >5 years duration as G2 group (17 male 63% and10 female37%), and n=42 DPN patients as G3 group (19male45% and 23fe-

male 55%). The three groups were accompanied by healthy people $n=40$ as a control group (C) (19 male 48% and 21 female 52%), age range (40-70 years). The concentration of NGF, CLDN-5, INS, FBS, HOMA-IR, HOMA-B%, and HOMA-S was calculated. In addition, HbA1C%, Lipid profile, and TyG Index were evaluated. Statistical analyses were performed using IBM SPSS Statistics, version 22.

Result: The levels of NGF and CLAUD-5 show a significant decrease in the G3 group compared with G2 and G1, as compared to the C groups ($p<0.05$). INS, HOMA-IR, HOMA-B%, and HOMA-S show significant differences in the G3 group compared with G1, G2, and C groups.

Conclusion: Reduction in NGF and CLAUD-5 levels can predict the risk of developing DPN in type 2 DM.

Keywords: Type-2 Diabetic Mellitus, Neuropathy, Nerve Growth Factor, Claudin-5, Insulin Resistance, Metabolic Syndrome.

■ Paper 39:

The Use of the Enzymatic Method of Processing Testicular Biopsies in Non-Obstructive Azoospermic Patients to Improve Sperm Recovery

Amina Al-Tameemi

Abstract

Background: The most challenging form of male infertility is non-obstructive azoospermia (NOA). Testicular biopsies yield non-motile sperm that are typically found within seminiferous tubules, which need to be thoroughly processed in a lab to separate individual sperm that are appropriate for ART. Currently, enzymatic and mechanical approaches are employed.

Aim of the Study: Study the possibility of sperm retrieval improvement by the enzymatic method after mechanical mincing of the testicular biopsy in azoospermic patients.

Subjects, Materials and Methods: Clinical trial study of thirty-two non-obstructive azoospermic men were included in the study who attended the In-



stitute for Infertility Diagnosis and Assisted Reproductive Technologies for a testicular biopsy. After a thorough history, physical examination, and investigations, testicular sperm extraction (TESE) under spinal or general anesthesia was done. The biopsies then underwent mechanical and enzymatic mincing procedures.

Results: In the enzymatic mincing method of testicular biopsies, 14 out of 32 patients (43.75%) had positive sperm recovery. In the mechanical method, 12 out of 32 patients (37.5%) had positive sperm recovery. Two patients out of twenty (10%) became positive after negative sperm release by mechanical mincing. However, there was no significant difference ($p = 0.611$) in the number of patients with positive sperm recovery between the enzymatic and mechanical mincing methods.

Conclusions: Although it is costly and time-consuming, the combining mincing method yielded 10% more positive sperm recovery after negative results by the mechanical method. There is no difference between the two methods in comparison to all the conditions studied.

Keywords: TESE, enzymatic mincing, mechanical mincing, collagenase.

■ Paper 40:

Clinical Profile, Etiological Spectrum, and Prognostic Utility of the RAPID Score in Adult Thoracic Empyema: A Descriptive Cohort Study from a Tertiary Care Center

Abbas Jaafar Khaleel Al-Anbari, Noor Abbas Hummadi Fayadh, Hydar Abdul-Amir Al-Hindy

Abstract

Background: A suppurative infection of pleural space, which is life-threatening and is characterized by a high morbidity and mortality rate is known as thoracic empyema. It is essential to have knowledge of local trends in terms of etiology, presentation, and outcome in order to manage it properly.

Aims: The purpose of the study was to outline clinical profile, etiological spectrum, and treatment outcomes of thoracic empyema in adult people and confirm RAPID score as the risk score in our population.

Methods: A descriptive cohort study would be carried out within the time-frame of January 1, 2024, and December 31 of 2025. This study was done in 25 adults who had a confirmed empyema and were enrolled. The collected data comprised demographics, clinical presentation, etiology, laboratory findings, and treatment. Risk-stratifying of the patients was done with the RAPID score and statistical analyses were done with correlation, regression and ROC curve analysis.

Results: The mean age was 58.4 ± 12.8 years, with 68.0% males. The most common comorbidities were COPD (48.0%) and diabetes mellitus (40.0%). Hospital-acquired infections accounted for 56.0% of cases. Pulmonary tuberculosis was the leading cause of death (28.0%). The RAPID score stratified 24.0% as low risk, 48.0% as medium risk, and 28.0% as high risk. One case of mortality (4.0%) occurred in the high-risk cohort during the study period. High-risk status was independently predicted by serum urea level >23 mg/dL (aOR: 8.5, $p<0.05$) and hospital-acquired infection (aOR: 10.3, $p<0.05$). Serum urea level and hospital-acquired infection were independent predictors of high-risk status (aOR: 8.5 and 10.3, respectively). Serum urea level demonstrated excellent discriminatory power for high-risk status (AUC=0.89). The Eloesser flap was the most common surgical procedure (76.0%).

Conclusion: Empyema in our setting predominantly affects older adults with comorbidities, with a high rate of hospital-acquired infections and tuberculosis. The RAPID score is a valuable prognostic tool, with serum urea being a particularly potent predictor of high-risk disease, enabling the early identification of patients who may require more aggressive management.

Keywords: Thoracic Empyema, Pleural Infection, RAPID Score, Risk Stratification, Tuberculous Empyema, Eloesser Flap.

■ Paper 41:

Novel genetic marker for steroid resistance in pediatric Iraqi nephrotic syndrome patient and its relation to biochemical marker (COQ10)

Rasha K. J. Ali ¹, Alaa Shamikh Hassan ², Mohammed Abed Darweesh ³

1) Department of pharmacy, Al-Warkaa College for Medical Sciences, Basra, Iraq

2) Department of Hematology, Misan University, College of Medicine, Misan, Iraq

3) Department of Pediatrics, University of Misan, College of Medicine, Misan, Iraq

Abstract

Background and Objective: - Nephrotic syndrome with resistance to steroid treatment is one of the common causes of end-stage kidney disorder in children and young adults. free radical mediated podocyte injury and cause proteinuria. A radical scavenger, Coenzyme Q (CoQ) promotes the cellular antioxidant network. Mutations in genes involved in Coenzyme Q10 (ubiquinone) manufacture, such as COQ6; COQ2;

decaprenyl diphosphate synthase subunit (PDSS2); and Aarf domain-containing kinase 4 (ADCK4), also linked with child-onset focal segmental glomerulosclerosis (FSGS) and steroid resistance. The most causative gene is ADCK4 is gene falls to enzymes encoding genes important in synthesis Coenzyme Q10, concentrated in podocyte mitochondria. ADCK4 stabilizes the CoQ complex to maintain podocyte homeostasis, in ADCK4-mutant patients CoQ10 levels were reduced so have benefit for CoQ10 supplementation. **Objective:** To investigate the role of ADCK4(COQ8B) gene polymorphisms and their relationship to the response to corticosteroid therapy in children with nephrotic syndrome and its correlation with serum level of coenzyme Q10

Methods: A randomized study and case-controlled was performed in 2021 started in April until December. The total patient included 160 patients. Eighty assessed in group of study the cases of nephrotic syndrome and the remaining falls in control (healthy group), who admitted to Misan pediatric

hospital, also attended to Clinic (outpatient's). The study (patient group) was categorized into two groups: [First group have forty patients responded to steroid treatment, and second Group also forty nephrotic patients with resistance to steroid]. Serum CoQ10 assessed by HPLC. The extracted DNA of blood samples were amplified by polymerase chain reaction (PCR) technique and ADCK4 genotype was determined by Amplification refractory mutation system ARMS-PCR. Genotyping for three single nucleotide polymorphisms done by using agarose gel electrophoresis of DNA.

Results: Single nucleotide polymorphism (SNP) of gene ADCK4 (rs398122980, c.1447 G\A, T) genotype show that the heterozygous G\A genotype similar percent in control and SSNS (85%), but more than SRNS (67.5%). While about homozygous genotypes AA, GG, and T\T. AA genotype more in SRNS group (20%), GG genotype more in SSNS (15%), and TT more in control group (3.8%). This difference was positively significant at $P < 0.05$ (PHI=0.227). while the biochemical result, Coenzyme Q10 significantly lowered ($P < 0.001$) in nephrotic group in compared with control, and in subgroups.

Conclusion: homozygous more than heterozygous significant variations in ADCK4 (COG8B) (rs398122980, c.1447 G\A, T) gene, homozygous AA genotype more in SRNS group (20%), associated with highly significant decrease ($P < 0.001$) serum level of coenzyme Q10.

Keywords: Steroid-Resistant Nephrotic Syndrome, Genetic, CoQ10

■ Paper 42:

Serum Interleukin-1 Beta and Urinary Neutrophil Gelatinase-Associated Lipocalin as Predictors of Diabetic Nephropathy

Al-Karrar Kais Abdul Jaleel 1, ,Asmaa Alattraqchi2

1) Medical Laboratory Department, Kufa Institute, Al-Furat Al-Awsat Technical University, Najaf, Iraq.

2) Collage of medicine, University of Alkafeel, Najaf, Iraq.

Abstract

Objective Diabetic nephropathy (DN) is the most common and devastating complication of type one and type two diabetes and leads to end-stage renal

disease (ESRD) in as many as 30% of persons with diabetes. Currently, there is a greater focus on early detection of nephropathy, to bring about in best patient outcomes. In this study explored the possible role of some biomarkers of inflammation (serum interleukine 1 beta (IL-1 β) and urine Neutrophil Gelatinase-Associated Lipocalin (NGAL) in diabetic nephropathy patients.

Patients and Methods: During the period from September 2022 to April 2023, a sum of 240 subjects was recruited. Among them, 180 were patients suffering from T2DM that had been selected from those who attended Al-sader Specialized Center of Nephrology and Renal Transplantation in Al-sader Teaching city in Najaf. These patients were classified into three groups according to their albumin/creatinine ratio (ACR), including (60) patients with mild diabetic nephropathy, (60)with moderate diabetic nephropathy, and(60) with sever diabetic nephropathy. 60 apparently healthy subjects matching the same age with diabetic subjects were selected as a control group.

Result: According to the results of this study, significantly elevated of IL-1 β and NGAL level have been found in mild, moderate and sever diabetic groups when compared to the control groups.

Conclusion: Most of biomarkers above may be highly related with degree of proteinuria. This immunological parameter was significantly correlated with patients who had diabetic nephropathy, so there is a susceptibility association between this interleukins and incidence of this disease among Iraqi patients.

Keywords: Serum Interleukin-1 Beta, Urinary Neutrophil Gelatinase, Diabetic Nephropathy

■ Paper 43:

Evaluating levels of interleukin-37 in non small cell lung cancer

Samar Muayad Al-Fadheil ¹, Nasser Ghaly Yousif ², Karim Ghaly Mohammed ³, Muayad Mohammed Al-fadhel ⁴, Raghdaa Adnan Seabakhash ⁴

Babylon university Hammurabi faculties of Medicine

- 1) College of medicine, Al-Muthana university, Iraq,
- 2) Kufa university faculty of medicine
- 3) Al-turath university Baghdad-Iraq.
- 4) Al-mustansiriya university Baghdad-Iraq

Abstract

The present study sheds light on interleukin-37 (IL-37) in NSCLC as part of the innate immune response against tumors, So; this study is designed to investigate the effect of IL-37 on the prognosis of lung cancer. A sixty newly diagnosed NSCLC patients from the Middle Euphrates Cancer Centre (MECC) were enrolled in this study, which took place between April 2017 and May 2018. Patients were followed up after treatment for six months. ELISA technique was used to investigate the IL-37 levels. The results show IL-37 mean significantly increased among NSCLC cases with an advanced stage ($P = 0.001$). Moreover, the linear correlation coefficients reveal a high positive association ($r = 0.527$) between IL-37 and NSCLC stage. After six months of follow-up, IL-37 levels were considerably lower after treatment than pre-treatment levels., $p = 0.034$. According to the Kaplan-Mier test, the mortality rate of NSCLC patients increased with elevated IL-37 in serum during six-month follow-up periods post-treatments. At the end of the research, we can conclude that IL-37 can be used as a prognostic marker to predict the survival rate and negative prognosis of lung cancer

Key Words: IL-37, NSCLC, tumor microenvironments, IL-1F7

■ Paper 44:

Comparison of different hypo-osmotic swelling test sub-types in asthenozoospermic and normozoospermic infertile men

Amina Al-Tameemi

Abstract

Background: asthenozoospermia refers to sperm motility in semen that is less than 32% progressive. This condition can be easily discovered by semen analysis. Host has been applied together with ICSI to enhance fertility and pregnancy rates in male severe asthenozoospermic patients.

Aim of study: to compare different hypo-osmotic swelling test sub-types in asthenozoospermic and normozoospermic infertile men

Patients, materials and **Methods:** this comparative cross-sectional study of 80 semen samples of 40 asthenozoospermic and 40 normozoospermic infertile men. All the samples and sub-types A-G underwent Hypo-osmotic swelling test.

Findings: the significant difference between normozoospermia and asthenozoospermia in the number of sperms with grade E was high (13.140+-6.990 vs. 8.790+-4.850, $p = 0.0020$). Although, there were significant differences between two groups in sperm cell with grade A and B (30.880+-12.270 vs. 38.540+-14.570, $p = 0.0130$ and 3.500+-2.490 vs. 2.200+-2.260 $p=0.0170$), respectively.

Conclusion: Asthenozoospermic men have more sperms with low quality grades (A and G) and less good quality grades (B and E) than normozoospermic men.

Key words: Asthenozoospermia, normozoospermia, HOST

■ Paper 45:

Prevalence of *pslD*, *pilA*, *hmgA* Genes among *Pseudomonas aeruginosa* Clinical Isolates and the association with biofilm strength

Kareem Hammadi¹, Abdul-Hameed Khadhair², Huda Mahmood³, Louay Al-Ani⁴

1) Dijlah University, Baghdad, Iraq.

2) College of Medicine, Alameed University, Karbala, Iraq.

3) Department of Biotechnology, College of Science, University of Anbar, Iraq.

4) Department of Medical Laboratory Techniques, Al-Huda University College, Iraq.

Abstract:

Background: *Pseudomonas aeruginosa* is a common source of hospital-acquired infections and is particularly hard to eliminate due to its natural and acquired resistance to multiple antibiotics. The study aimed to estimate the frequency of *pslD*, *pilA*, and *hmgA* among carbapenem-resistant (CR) isolates and examined the association between biofilm intensity and carbapenem resistance.

Materials and Methods: The microscopical, cultural, biochemical characterization, and VITEK 2 System were used to achieve the final validation of the *P. aeruginosa* isolates. PCR and other molecular diagnostic techniques were used to identify the *pslD*, *pilA*, and *hmgA* genes. The CLSI-2024 recommendations were assessed to confirm the antimicrobial sensitivity. The microtiter plate technique was used to quantify biofilm formation. SPSS was used for all statistical analyses.

Results: Ninety-six percent of 25 CARP-resistant *P. aeruginosa* isolates had the *pslD* gene, which produces Psl exopolysaccharide, an essential component of the biofilm matrix; similarly, ninety-six percent of the isolates had the gene producing pilin structural components. Four percent of the population had the brown to black pyomelanin pigment-producing isolates which have the *hmgA* gene.

Conclusion: Chi-square analysis revealed a strong correlation between the severity of biofilm development and carbapenem resistance ($\chi^2 = 14.20$; $P < 0.022$), indicating that biofilm production is consistently linked to *P. aeruginosa* that is resistant to carbapenem.

Keywords: Biofilm formation, carbapenem resistance, Genotype, *pslD*,

pilA, *hmgA*.

■ Paper 46:

Evaluation of The IL-2 Serum Level and The Single Nucleotide rs6822844 IL2 Polymorphism in Development of Celiac Disease in Iraqi Children.

Mustafa Ali Hussein Khalaf¹, Prof. Dr. Israa K. AL-Yasiri² Assist. Prof. Dr. Karrar Abdil Aziz Ali Beg³, ,

(1,2,3) Jabir Ibn Hyyan University For Medical and Pharmaceutical Sciences, Faculty of Medicine.

Abstract:

Background : Celiac disease is an immune-mediated disorder that affects the gastrointestinal tract. It arises from the ingestion of gluten found in cereals, particularly those with HLA-DQ2 and HLA-DQ8, which trigger an autoimmune response.

Objectives: To introduce new diagnostic markers in patients with celiac disease for easy, fast, low cost, and non-invasive diagnosis: evaluation of serum interleukin-2 levels from patients compared with healthy controls by ELISA technique. serum levels of autoantibodies against tissue transglutaminase were also measured. Single nucleotide polymorphism analysis of (IL-2) in the peripheral blood cells of patients CD revealed the diagnostic potential of IL-2 by (PCR).

Materials and Methods 45 : children have celiac disease and 43 healthy subjects in the control group were enrolled in this study, with an age range of 2-14 years. The diagnosis of the disease was confirmed by serological examinations using of anti-tissue transglutaminase IgA and IgG antibodies using enzyme-linked immunoassay technique (ELISA). Serum was examined for IL-2 using (ELISA). In addition, using tetramer PCR was used for single nucleotide polymorphism analysis of IL-2.

Result: Serum levels of anti-tissue transglutaminase (IgA and IgG) antibodies were significantly higher in patients with celiac disease than in controls. The IL-2 serum level was significantly increased in the patient group. The IL-2 level was 26.33 ± 6.59 in patients group and in healthy control groups was 6.55 ± 0.30 , p value ($p=0.004$). In addition, according to IL2 polymorphism there was no significant difference between the patient groups and healthy

group ($P < 0.05$).

Conclusion: Elevated IL-2 concentrations in newly diagnosed patients with CD may be a potential biomarker for the diagnosis and prognosis of celiac disease. There was no significant difference according to SNP rs6822844 IL2 polymorphism.

Key words: celiac disease (CD), Interleukin 2(IL-2), IL2 polymorphism.

■ Paper 47:

Sanger Sequencing for Molecular Kinship Determination in Iraqi Families with Missing Paternal Members

Israa Abdulsattar Ali¹, Dhuha Salim Namaa², Faridah Mohd Nor³, Nur Najmi Mohamad Anuar⁴, Siti Fathiah Masre^{4*}

1) Faculty of Health Sciences, University Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, 5300, Kuala Lumpur, Malaysia.

2) Department of Forensic Biology, Higher Institute of Forensic Sciences, Al-Nahrain University, Jadriya, Baghdad, Iraq.

3) Faculty of Medicine, Universiti Kebangsaan Malaysia, Bandar Tun Razak, 56000 Cheras, Kuala Lumpur, Malaysia.

4) Centre for Toxicology and Health Risk Studies, Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, 5300, Kuala Lumpur, Malaysia

Abstract

Background: Kinship testing is crucial during forensic investigations into missing persons, and Sanger sequencing has proven to be an effective method for establishing biological connections. The present work aimed to establish the worth of Sanger sequencing to resolve paternity claims among Iraqi families whose fathers have gone missing

Materials and Methods: Genomic DNA was extracted from 300µl of whole blood, collected from six cases (n=120 samples) at the Medical Legal Directorate in Baghdad, Iraq. Each case comprised three relatives of the missing father, the mother, and the putative child. Polymerase Chain Reaction (PCR)



procedures were performed using specific primers for the D18S, TPOX, CSF, and FGA genes. Sanger sequencing was utilised to compare the sequences from the relatives with those of the child.

Results: The findings of the present study revealed the sequence of outcomes for six Iraqi cases of missing fathers. The range of DNA concentration was (75 to 110 ng/ μ L). The findings revealed a high degree of sequence similarity between the grandson and his grandparents, as well as among the siblings, aligning with the expected patterns of inheritance. The sequencing data for six families revealed the matching alleles used in the study for each family member, which supported the pedigree hypothesis and confirmed the biological connections between the grandparents, siblings, and the grandson.

Conclusion: In conclusion, Sanger sequencing is widely utilized in kinship analysis due to its accuracy, reliability, and specific application scope. In certain situations, such as cases involving a missing father where traditional methods fall short, it is considered a crucial method for confirming paternity alongside other techniques like Short Tandem Repeats.

Keywords: Sanger Sequence, Kinship analysis, missing father cases, Forensic application.

■ Paper 48:

Studying the distribution of *H.pylori* infection with some demographic and clinical factors

Rasha Hadi Saleh ¹, Aysar Ashour Khalaf ², Zaytoon A.Alkhafagii ³

1) Department of Clinical laboratory sciences, College of Pharmacy, University of Babylon, Babylon, Iraq 2) Department of Biology, College of Educational for Pure Science, University of Kerbala, Kerbala, Iraq. 3) Department of Microbiology, College of Medicine, University of Babylon, Babylon, Iraq.

Abstract

Introduction: *Helicobacter pylori* is common, widespread pathogenic bacteria worldwide and causes chronic bacterial infection in humans. It colonizes the human stomach and it has strong connections to inflammation of intestine,

gastric ulcer and gastric cancer.

Aims of study: This study aims to investigate *H.pylori* infection and to identify some variables that associated with infection among *H.pylori* patients.

Material and Methods: A total of one hundred fifty three (153) patients from both sex and various age groups who attended to the hospitals and outpatients in Al-Hilla city, over a period of three months (from December 2022 to March 2023) was included in the present study. All participants completed a questionnaire that contains data: demographics factors, blood group, clinical presentation, outcomes of infection, associated diseases, clinical examination, and diagnostic tests. The infection with *H. pylori* was determined depending on numerous of invasive and non-invasive methods, including serology, stool antigen test (SAT), urease test, 14C breath test and underwent endoscopy and histopathological examination

Results: The results revealed that infection with *H. pylori* was higher in females (67.32%) than men and in ages (20-29) more than in other ages. *H. pylori* infection was higher among individuals living in urban areas, non-married, filtered water drinkers, eaten inside and outside the house and the O+ blood group. Abdominal pain is the major clinical presentation followed by nausea. Gallbladder diseases and thyroid disorders are most common diseases detected among patient with *H. pylori* infection. A gastritis/gastric erosions were reported almost clinical outcomes in *H. pylori* patients. The *H. pylori* was detected by IgM and IgG antibodies, stool antigen test (SAT), urea breath test (UBT), urease test, culture, endoscopy and histopathological examination that shows positivity in 22.88%, 12.42%, 15.03%, 9.15%, 18.30%, 21.57% and 9.15% of samples respectively.

Conclusion: These data suggest that there are related between *H. pylori* infection and some variables like (age, sex, social situation, residences, water supply and food sources). The status of *H. pylori* infection can be determined based on different tests.

Keywords: *H. pylori*, gastric ulcers, clinical features, urea breath test, abdominal pain.

■ Paper 49:

Pathogenesis Celiac Disease in Children, Genetic Susceptibility, Gut Microbiome, Diagnosis and treatment

Nisreen Jawad Kadhim¹, Mohammed Salih Mahdi², Laith M Abbas Al-Huseini³, Asaad Abbas Khalaf⁴

1) Department of Microbiology, College of Medicine, Warith Al-Anbiyaa University, Karbala, Iraq.

2) Department of Microbiology, College of Medicine, Warith Al-Anbiyaa University, Karbala, Iraq.

3) Department of Pharmacology, College of Medicine, Warith Al-Anbiyaa University, Iraq, Karbala

4) College of Nursing, University of Kerbala, Karbala, Iraq.

Abstract

Introduction: Gluten ingestion causes coeliac disease, an autoimmune status pronounced by general evidence and enteric dysfunction. This disease's generality is endlessly accelerative. The genetic susceptibility to the primary genes coupled to coeliac disease, its clinical characteristic, designation standards, and treatment are all summarised in this work. **Methodology:** This review conducted a across-the-board search between 2015 and 2024 across major databases, including PubMed, Scopus, and Google Scholar, to identify studies related to celiac disease using relevant keywords. Examination not related to celiac disease were consistently excluded. **Results:** The intestine normal flora and hereditary factors play a leading role in the improvement of coeliac disease, which is an autoimmune sickness that is gun trigger by gluten in hereditary allergic individuals, reported to an investigation of 110 studies. The only recognized treatment for coeliac disease, which has a strong hereditary relation, is rigorous attachment to a gluten-free diet. Numerous treatments that target assorted infective targets of coeliac disease have been discovered in recent years. This study assesses the actual treatment derivative for coeliac disease as well as treatments meant to manage its side effects, similar treatment-resistant coeliac disease.

Conclusion: Hereditary factors play a leading role in coeliac disease. Addition penetration into these hereditary foundations improves our understanding of the disease's causes and makes it easier to make new treatment program and

preventive measures.

Keywords: Children, Celiac Disease, Genetic, Microbiome, Diagnosis

■ Paper 50:

Trace element imbalance as a possible factor in long-COVID

Wasim Talib Al Masoodi 1&2, Sami Waheed Radhi 1, Hussein Kadhem Al-Hakeim1 , Habiba Khdaïr Abdalsada 3

1) Department of Chemistry, College of Science, University of Kufa, Najaf, Iraq

2) Department of Chemistry, Faculty of Medicine, University of Al-Ameed. Karbala 56001, Iraq

3) College of Pharmacy, Al-Muthanna University, Al-Muthanna, Iraq

Abstract

Background. Long-COVID is defined by persistent symptoms following an initial COVID-19 infection. The normal immune function depends on a precise balance of trace elements, which can provide fresh insights into prospective therapeutic strategies while maintaining oxidative balance and limiting excessive inflammation. Zinc, copper, cobalt, and manganese deficits or excesses can alter the immune system's normal functions and oxidative stress. The study aims to study the trace element profile for predicting long-COVID. **Methods.** The levels of serum copper and zinc were measured spectrophotometrically. In contrast, cobalt and manganese were measured using flameless atomic absorption spectrophotometry in 60 long-COVID patients and compared with the 30 controls who had previous SARS-CoV-2 infection but were free from long-COVID symptoms.

Results. Serum levels of copper, cobalt, manganese, and the copper/zinc ratio were considerably elevated in long-COVID patients compared to the control groups. Nonetheless, there was no significant change in zinc levels relative to the control group. The cobalt concentration increases with the duration of the disease and inflammation. Serum manganese level is significantly and negatively correlated with weight. The duration of disease is inversely linked to serum zinc concentrations. There is a substantial correlation between serum copper levels and the period of recovery from acute SARS-CoV-2 infection. **Conclusions.** Long-COVID is associated with alterations in serum trace elements (copper, cobalt, and manganese). The imbalances in the trace elements are associated with inflammation, duration of disease, and age. These imbalances may contribute to prolonged symptoms and greater disease severity, suggesting that trace element monitoring could be beneficial in managing long-COVID.

Keywords: Long COVID, Trace elements, FAAS, Cobalt And manganese

■ Paper 51:

Wrapping the braided cheese with edible protein membranes enriched with probiotics.

Alyaa Hadi Al-Husseinawy¹, Ali R Mulakhdair², Zahraa Reasan Kareem sha-ti²

1) Department of dairy technology, College of Food Science, Al-Qasim Green University, Babylon, Iraq

2) Department of Food health and Nutrition, College of Food Science, Al-Qasim Green University, Babylon 51031, Iraq.

Abstract

This study investigated the role of protein-based edible films and coatings prepared from whey protein and casein at different concentrations (5%, 7.5%, and 10%) in preserving braided cheese. The 7.5% formulation was identified as the most effective. In this work, films refer to free-standing protein membranes, whereas coatings denote the layers directly applied to the cheese surface through dipping. This distinction highlights that films provide the structural barrier, while coatings ensure close adhesion to the cheese, thereby maximizing protective efficiency. The formulations were further enriched with probiotics, namely *Bifidobacterium* and *Saccharomyces boulardii*, and applied in single, double, and triple layers. The results showed that multi-layer systems, especially triple layers, significantly improved product stability by reducing moisture loss, preserving protein and fat content, regulating pH and acidity, and maintaining desirable sensory qualities ($p < 0.05$). Whey protein-based films provided strong barrier capacity and better probiotic survival, whereas casein films contributed to greater structural firmness. Among the probiotics, *Bifidobacterium* enhanced antimicrobial activity and mineral retention, while *Saccharomyces boulardii* supported improved flavor and antioxidative stability. Overall, probiotic-enriched protein films and coatings proved to be an efficient and sustainable preservation method that prolongs the shelf life of braided cheese while enhancing its nutritional and functional properties.

Keywords: Edible protein films; Probiotic coatings; Braided cheese; Functional dairy packaging; Bioactive preservation

■ Paper 52:

Isolation, Identification, and Antibiotic Susceptibility of Bacteria causing Hospital Acquired Infections in Al Hussein Medical City in Kerbala

Huda N. AL Baroody¹, Maryam H. Jabbar², Noor Jameel Khudair³, Zahra H. Al-Wazni⁴, Zahraa Ch.Hameed⁵, Zainab Abdul Kareem Abbas⁶, Zahraa Abdul Adheem Al-maiyaly⁷, Doaa Faik Ali Alasady⁸

^{1,2,3,4,5,6,7,8} University of Karbala College of Applied Medical Sciences, Al-Taff university college

Abstract

Background: Hospital-Acquired Infections (HAIs) remain a significant public health concern in healthcare facilities, where immunosuppressed patients at risk of contracting opportunistic microorganism. This study is aimed at determining the incidence of Facility Acquired Infections and identifying the most prevalent bacterial pathogens that cause these infections, and their sensitivity to the antibiotics used in these facilities. **Methods:** 165 samples were collected from different infection sites such as urine, burns, wounds, sputum, cerebrospinal fluid (CSF), and blood from hospitalized patients in Al Hussein Medical City in Kerbala from January to May 2025. **Results:** A total of 125 subjects with positive cultures gave rise to 133 bacterial isolates. The distribution of infection types demonstrated a significant association with sex ($p < 0.05$). Respiratory tract infections (RTIs) were more commonly observed in males.

On accounting for 70% of isolates. Among these pathogens, *Klebsiella* spp. (35.5%), *Escherichia coli* (30.1%), and *Acinetobacter* spp. (15.1%). Moreover, *Staphylococcus* spp. (50.0%) was the most prevalent species among Gram-positive pathogens.

Antibiotic susceptibility testing revealed high resistance rates among Gram-negative and Gram-positive bacteria, exceeding 70% for several commonly prescribed antibiotics, including cephalosporins and fluoroquinolones. Conversely, lower rates of resistance were observed for meropenem and doxycycline, suggesting their potential efficacy in treating infections of resistant strains.

Conclusion: These findings emphasize the urgent need for strict measures to prevent infections and the implementation of targeted antibiotic stewardship programs to mitigate the spread of drug-resistant bacterial strains in healthcare settings.

Keywords: Nosocomial infections, antibiotic resistance, Karbala hospi-

tals, bacterial identification

■ Paper 53:

Evaluation of *Mentha piperita* and *Ocimum basilicum* extracts on the antifungal, lung, and colon cancer cells

Nadia N. H. AL Masaoodi*^{1,2}, Raghad Ahmed Hussien^{1,3}, Maha Khudhair Ibadil

1) College of Medical and Health Technologies, Al-Zahraa University for Women, Kerbala, Iraq

2) College of Sciences, University of Kerbala, Karbala Iraq

3) Medical physics department Physics Department, University of Hilla, Babylon, Iraq

Abstract

The *Mentha* and *Ocimum* species contain a wide range of chemical components. These components have been shown to have cytotoxic properties that may lead to the development of anti-cancer agents. These plants also have antifungal and antibacterial properties. This research is an exploratory study on the effects of two types of medicinal herbs, basil and mentha. The fungi used in the study were obtained from the laboratories of the University of Karbala, and the isolate was activated and cultured on SDA media. These plants were collected from the botanical garden, washed, and exposed to open air to dry the sample, ground into powder via an electric grinder. A Soxhlet apparatus was used to assess the viability of the lung cancer cell line after treatment with *Mentha* and *Basil* via the MTT assay method. The data presented indicate the effects of the mentha and basil extracts on the growth of the fungus *Trichophyton rubrum* at a 50mg/mL concentration. Both the mentha and basil extracts had similar inhibitory effects on fungal growth, with percentages of 38.76% and 38.56%, respectively, A 100 mg/mL concentration had a similar inhibitory effect, with percentages of 40.53% for mint and 41.74% for basil. At a concentration of 200 mg/mL, we observed a significant increase in the inhibitory effect, with percentages of 44.85% for mint and 45.73% for basil, with P values greater than 0.7655. At a concentration of 250mg/mL, the results revealed a significant increase in the inhibitory effect, with percentages of 47.84% for mint and 49.63% for basil. The incoming data indicate the effects of mint (*Mentha*) and basil (*Basil*) extracts on A549 lung cancer cells. At a concentration of 50mg/mL, the mentha extract had an inhibitory effect of 13%, whereas

the basil extract had an inhibitory effect of 11%. At a concentration of 100mg/mL, the mentha extract had an inhibitory effect of 18%, whereas the basil extract had an inhibitory effect of 24%. A P value greater than 0.8549 indicates no statistically significant difference between the extracts. Concentration 200mg/mL. The mentha extract had an inhibitory effect of 31%, whereas the basil extract had an inhibitory effect of 29%. At a concentration of 250mg/mL, the mentha extract had an inhibitory effect of 32%, whereas the basil extract had an inhibitory effect of 37%. The data presented indicate the effects of peppermint (Mentha) and basil (Basil) extracts on colon cancer cells. The 50mg/mL mentha extract had an inhibitory effect on 14% of the bacteria, whereas the basil extract had an inhibitory effect on 16% of the bacteria. A concentration of 100mg/mL mentha extract had an inhibitory effect of 22%, whereas the basil extract had an inhibitory effect of 26%. At a concentration of 200mg/mL, the mentha extract had an inhibitory effect of 29%, whereas the basil extract had an inhibitory effect of 33%. At a concentration of 250mg/mL, the mentha extract had an inhibitory effect of 38%, whereas the basil extract had an inhibitory effect of 44%.

Keywords: colon cancer, lung cancer, *Mentha piperita*, *Ocimum basilicum*, *Trichophyton rubrum*

■ Paper 54:

Case report of cerebral wasting syndrome (physiological aspect)

Ali Reda Hussein

Department of Animal Production, College of Agriculture, Thi-Qar University, 64001, Iraq

Abstract

Objective: we want to report an interesting case of cerebral wasting syndrome presented with moderate brain injury and electric shock to provide a good physiological view and a better understanding of this syndrome.

Case report: we report the case of a 39-year-old patient – with a recent electric shock and brain injury.

Conclusion: This case report provides a unique opportunity to observe the physiological aspect of a patient diagnosed with cerebral salt wasting syndrome after electric shock and brain injury, Understanding the underlying pathophysiology of cerebral salt wasting syndrome is essential for effective diagnosis and treatment.



Keywords: Physiology, Cerebral, Wasting hyponatremia.

■ Paper 55:

The Silent Threat: Epidemiology, Diagnostic Gaps and One-Health Control Measures for Crimean–Congo Hemorrhagic Fever in Najaf Governorate, Iraq.

Thualfakar Hayder Hasan⁽¹⁾, Wurood Kadhim Abed⁽²⁾, Maha Mashraq AlBayati⁽³⁾

^{1,2} Jabir Ibn Hayyan University for Medical and Pharmaceutical Sciences, Najaf, Iraq.

³ Department of Pathological Analyses, Faculty of Science, University of Kufa, Iraq.

Abstract:

Crimean-Congo Hemorrhagic Fever (CCHF) is a significant problem for the population of Iraq, and recent outbreaks of the disease revealed its endemic nature and the need to create more aggressive control strategies. This research paper examines the epidemiological case of CCHF in the Governorate of Najaf, Iraq, and explores how the disease develops, as well as the socioeconomic factors that contribute to its spread. Through the available literature and simulated data, the research aims to provide a comprehensive picture of the disease burden and develop practical recommendations that can be implemented in public health actions. The findings emphasize the significance of enhanced surveillance, community participation, and integration of control of the vector programs that can be used to curb the impacts of CCHF on the local population. This paper can be used by health authorities in Najaf to come up with specific disease prevention and control policies, which would eventually safeguard the health of the community.

Keywords: Crimean-Congo Hemorrhagic Fever (CCHF), Tick-borne diseases, Vector control, Najaf Governorate, Iraq.

■ Paper 56:

Medicinal Plants as Adjuncts to Blood Thinner Therapy: Promising Pharmacological Insights.

Etab Abdul-Ameer AL-Ogla¹, Urjwan Alali², Hadeel K.M. Alboaklah³,

1)Department of Clinical Laboratory Science, Pharmacy College, University of Kerbala, Iraq.

2&3)Department of Pharmaceutical Chemistry Department, Pharmacy College, University of Kerbala, Iraq.

Abstract

Warfarin is one of the types of blood thinner commonly used in the world. Warfarin accumulation in plasma marks the renal cortex and causes renal failure in rats. Artemisia is an essential herbal medicine of fundamental importance for human health. Such plant has antioxidant enzyme roles and is needed for the proper function of the immune system.

This study aimed to evaluate the effects of Warfarin on rats' other tissues and biochemical parameters with and without herbal supplements and the protective effects of Artemisia against Warfarin intoxication.

Method : 40 male rats aged 10 weeks old were chosen in this study. 4 mg/kg of Warfarin was administered to rats via oral intake daily. During the period of the experiment blood samples collection end each week. By the end of the thirty study days, the rats were sacrificed under ether anesthesia. Afterward, the tissue sections were kept for Histopathological and biochemical analyses.

Result: Histopathological alterations have included vacuolar and granulated degenerations in cells, heterochromatic nuclei, necrosis, and bleeding as well as proliferation in pancreas and lymph node tissue. Hematological and biochemical profiles were changed badly under the effect of Warfarin, while groups treated with Warfarin plus Artemisia were precisely decreased. The modification between the four groups was statistically significant. This study aims to estimate the protecting special effects of Artemisia in contradiction of Warfarin-induced toxicity in rats, focusing on its impact on various tissues and biochemical parameters, both with and without the inclusion of herbal supplements.

Keywords: Anticoagulants, Antioxidant enzyme, Herb-drug interactions, Histopathological parameters, Medicinal plants, Warfarin

■ Paper 57:

Exploring the Correlation Between Total IgE and IL-17A in Pediatric Asthma Original Article

Masara Hashim Alaraji¹, Mariam Zuhair Almusawi², Suhaila Rayhaan³, Haidar A.N. Abood^{4a&b}, Hawraa Fadhil Abbas⁵

1) Center of Pediatric Pulmonology, Karbala Teaching Hospital for Children, Kerbala, Iraq.

2) Center of Pediatric Pulmonology, Karbala Teaching Hospital for Children, Kerbala, Iraq.

3) Department of Biochemistry, College of Medicine, University of Kerbala, Kerbala, Iraq.

4a) Center of Pediatric Pulmonology, Karbala Teaching Hospital for Children, Kerbala, Iraq.

4b) Department of Pharmacology, College of Medicine, University of Kerbala, Kerbala, Iraq.

5) Department of Biochemistry, College of Medicine, University of Kerbala, Kerbala, Iraq.

Abstract

Background: Asthma is a heterogeneous disease which is characterized by variability in clinical phenotypes and endotypes depending on the underlying biological causes. The prevalence of high serum IgE levels has been proved to be closely associated with asthma severity in children and adults, whereas the presence of IL-17A in the serum correlates with an increased risk of severe exacerbations. This study aimed to measure serum IgE and IL-17A levels in asthmatic children, to further investigate the correlation between them. **Methods:** This cross-sectional study included 90 asthmatic children. Children with asthma diagnosed by clinical examination and age-appropriate spirometry between the ages of 7 months and 16 years were chosen at random. The clinical-based diagnosis was supported by the modified asthma prediction score, and spirometry was used to diagnose individuals aged 6 and up. Serum samples were taken in order to measure the levels of IgE and IL-17 A. **Results:** The results showed that 58 of children were male and 32 of them were female. The mean IgE serum level was 299.93 ± 270.88 IU/ml while serum IL-17A level was 1.31 ± 1.57 . A significant correlation was shown between

age and total serum IgE level (p -value= 0001). Furthermore, there was a significant positive correlation between serum IL-17A level and total serum IgE level. Conclusion: Asthma is associated with increased level of IgE, which are elevated with age increment. The findings showed that IL-17A serum level elevated more in patient with higher level of IgE.

Keywords: Asthma, Asthmatic Children, IgE, Cytokines, IL-17A.

■ Paper 58:

Evaluation the Role of Insulin Growth Factor Binding Protein 7 and Correlation with Alzheimer's in Iraqi Type 2 Diabetes Mellitus.

Sara Kamal

Abstract

Background: A prevalent metabolic condition associated with aging, obesity, and insulin resistance is type 2 diabetes mellitus (T2DM). Type 2 diabetes increases the risk of Alzheimer's disease (AD), where impaired insulin signaling promotes tau hyperphosphorylation and β -amyloid ($A\beta$) accumulation, in addition to microvascular and macrovascular problems.

Methods: : This study looked at the role of insulin-like growth factor binding protein 7 (IGFBP7) in type 2 diabetes and its potential connection to AD. to evaluate β -cell dysfunction, IGFBP7 expression, and its relationship to neurodegeneration.

Results: The liver and pancreatic islets release IGFBP7, which has a greater affinity for binding insulin than IGFs. In T2DM, elevated IGFBP7 levels impair β -cell function by reducing glucose-stimulated insulin secretion (~25%), lowering PAK1 expression, and diminishing mitochondrial respiration. These mechanisms inhibit insulin release and contribute to β -cell dysfunction. Concurrently, T2DM-associated dyslipidemia—marked by elevated triglycerides, low HDL-C, and small dense LDL—exacerbates vascular damage and accelerates cognitive decline. Composite lipid indices, including the atherogenic index of plasma, triglyceride-to-HDL-C ratio, and Castelli indices, provide improved prediction of vascular and neurodegenerative risk compared to isolated lipid parameters.

Conclusions: Type 2 diabetes mellitus; Alzheimer's disease; IGFBP7; β -cell dysfunction; neurodegeneration, lipid indices.

Keywords: T2DM , AD, Insulin growth factor binding protein 7, Insulin

resistance(IR).

■ Paper 59:

Development in Systemic Lupus Erythematosus Clinical Findings and Therapeutic Strategies during the period of 2015-2025: a Review

Ali Razzaq Hussein

Directorate of Education in Al-Najaf, Ministry of Education, Al-Najaf, Iraq.

Abstract

Background: Systemic lupus erythematosus (SLE) is a various autoimmune disease, involving relations of genetic, epigenetic, and environmental influences that lead to aberrant innate and adaptive immunity production.

Objective: To summarize advances in the understanding of SLE mechanisms, clinical phenotypes, and therapy from 2015 to 2025.

Methods: Narrative literature review involving RCTs, high-quality case series, translational studies, and guideline declarations. Searched databases included PubMed/MEDLINE, NEJM and Lancet archives, EULAR guidance repositories. Noteworthy trials included BLISS-LN, TULIP-2, AURORA-1, NEJM bromide, LILAC/litifilimab, pivotal CAR-T and daratumumab presentations.

Results: Mechanistic studies highlight the central roles of type I interferon pathways, plasmacytoid dendritic cells, B-cell/TLR7 signalling, neutrophil extracellular traps and long-lived plasma cells. Targeted therapies include IFN-pathway blockade (alirocumab), B-cell-targeted therapy (belimumab), nephritis-focused small molecules (voclosporin), immunomodulators (iberdomide), plasma-cell targeting with monoclonal antibodies (daratumumab) and cell-based therapies (anti-CD19 CAR-T). Current recommendations emphasize the use of hydroxychloroquine, steroid sparing regimens and phenotype-driven targeted agents.

Conclusions: Management of SLE has evolved from broad immunosuppression to targeted and phenotypically directed treatments. Key areas to focus on are predictive biomarkers, effectiveness studies of various therapies, post marketing surveillance of the long-term safety of novel treatments and mak-

ing sure that everyone has access to high-impact treatments.

Keywords: SLE, pathogenesis, therapeutics, B cells, interferon, 2015-2025.

■ Paper 60:

Consequences of pregnancy-induced hypertension: a two-year single-center case series experience

Maysaloon Adnan Abdul ALRazzak

MbchB DOG. CABOG Fellow ship in IVF & ART, University of Kerbala college of medicine obstetrics &gynecology department

Abstract

Background: Pre-eclampsia is one of the primary reasons for fetomaterial mortality and morbidity, as well as stillbirth when left untreated. After 20 weeks of gestation, severe preeclampsia, a significant pregnancy sequence, appears and is characterized by raised blood pressure besides protein in the urine. We assessed the maternal and fetal outcomes in pregnancies complicated by preeclampsia in light of the critical advantage of early management of females with preeclampsia and the rising prevalence of these disorders in pregnancy.

Materials and Methods: Between 2020 and 2022, research and sample selection for this prospective observational cohort were conducted. All new deliveries (2375) that occurred in Babylon City throughout the research period were included in our data source, and 90 samples were identified as having severe preeclampsia and evaluated. A detailed medical history, physical examination, and pertinent tests like a complete blood count, urine protein test, coagulation profile, and liver function test were used to evaluate all the registered females. The information gathered includes information on the patient's age, gestational age, clinical and laboratory results, birth method, and blood pressure measurements taken at the time of admittance.

Results: Out of the 2375 deliveries that occurred in Babylon during the research year, the average age of the 90 mothers that were enrolled was 25 years old. In 81.1% of instances, prenatal care was routine. 0.41% of women had severe preeclampsia overall. The majority of cases (63%) had late-onset preeclampsia. 10% of females had a family history of hypertension, and 41% of mothers had a history of gestational hypertension. Antepartum hemorrhage

(17), Eclampsia, and Abruption placenta (16% each) were the most common maternal complications, while HELLP syndrome occurred in 9% of mothers. Fetal outcomes were as follow: 79.9% were live birth of them 51.25 are term babies 43.1% were preterm. 36.7% of fetuses were born with respiratory distress syndrome or had IUDs (5%), and 7% delivered stillbirth. 77% of pre-eclamptic women were terminated with cesarean section.

Conclusion: Although there was one maternal death, still, both maternal and fetal complications of preeclampsia were common. The overall prevalence of severe preeclampsia in the current study was 0.41%. To lessen the condition of uncertainty, and terrified experience, women and their partners require thorough, consistent, and repeated information on severity and prognosis.

Keywords: Preeclampsia, eclampsia, HELLP syndrome; perinatal death, maternal, fetal, complications, early-onset, late-onset, hypertension.

■ Paper 61:

Seroprevalence of Typhoid Fever and Malta Fever among Febrile Patients in AL-Najaf.

Ali Razzaq Hussein

Directorate of Education in Al-Najaf, Ministry of Education, Al-Najaf, Iraq.

Abstract

Typhoid fever and Malta fever are increasingly prevalent, so the present study designed to investigate seroprevalence for salmonellosis and/or brucellosis among febrile patients in AL-Najaf province, Iraq. The existing study included all 1156 febrile patients with bowel disorder attending the serological branch of Al-Hakeem General Hospital in AL-Najaf city, Iraq, during the period between 1/ January / 2023 and 31/ December / 2023 and were examined for salmonellosis and brucellosis by Rapid test and rose Bengal test, respectively. The study found that among 1156 patients, 30.3% remained seropositive for typhoid fever (*Salmonella*) and 13.7% were seropositive for Malta fever (*Brucella*). Regarding sex, females were more likely to be febrile (54.8%), *Salmonella* (16.5%), and *Brucella* (7.1%) than males (45.2%, 13.8% and 6.6%, respectively). The age range of patients in the current study is 11-80 years;

the 11-20 age group is more vulnerable to *Brucella*, and the 21-30 age group is more febrile and susceptible to *Salmonella*. However, the epidemiology of *Salmonella*, *Brucella*, and febrile patients is significantly higher in summer seasons. In addition, in febrile patients, the co-seropositivity for *Salmonella* and *Brucella* is 5%; co-seronegativity is 61%. Moreover, the infection indices for *Salmonella* only and for *Brucella* only are 25.3% and 8.7%, respectively. This study concluded that seropositivity for typhoid fever, Malta fever, and coinfection was 30.3%, 13.7%, and 5%, respectively, in 2023 at Al-Hakeem General Hospital in AL-Najaf province, Iraq.

Keywords: *Salmonella*, *Brucella*, Salmonellosis, Brucellosis, Typhoid, Malta, Febrile, Seropositivity.

■ Paper 62:

Advances in Neoantigen-Targeted and Checkpoint-Based Immunotherapies: Overcoming Tumor Immune Escape

Hiba Ahmed¹ , Athraa Jaleel Alshemmary¹ , Shahad Ali Kamil¹ , Sara Ahmed Jawad²

1)Jabir ibn Hayyan University

2)University , Kufa University

Abstract:

Neoantigens as unique biomarkers and targets for therapy in cancer immunotherapy have drawn significant interest. The ability of them to induce immune responses that are remarkably selective for tumor cells and that distinguished quickly growing tumors from healthy tissues has now been shown in research. The research on cancer neoantigens has progressed dramatically in the past decade. The identification of new and actual neoantigens from extensive multi-omics datasets is now a vital but difficult job. Tumors are infiltrated by T cells after being given immunogenic tetrapeptides by the HLA system of the cancer cell and help patients live. In addition to being a vital element in the antitumor immune system, cancer antigens are also the central element of the immune capacity of T cells to distinguish self from nonself.

Direct and comprehensive identification of those naturally occurring peptides



on HLA molecules using the HLA ligandome analysis facilitates the discovery of cancer antigens. In addition, the proteogenomic approach has provided further insight into the cancer HLA ligandome by integrating genomics and classical proteomics data. Despite this progress in the field of cancer immunotherapy, curative treatments remain elusive due to the tradition emphasis on cytotoxic pathways for tumor cell killing. Chao. Immunotherapy has attracted substantial attention in the cancer

An added amount of research, however, suggests that cancer cells' changed proteins, which provide as tumor markers, can be reversed into peptides and seeable on the surface of the tumor cell. Once at that place, the immune system can envision them as "non-self." Contemporary technology and computational methods make it practical to learn neoantigens, such private epitopes are starting from the tumor mutanome .

Neoantigens develop from tumor-specific alterations. These include integrated viral open reading frames, aberrant RNA splicing, genomic abnormalities, and incorrect post-translational modifications. Patient T cells detect peptides from somatic mutations large enough to trigger a T cell response. Researchers are further convinced that T cells can detect a range of genetic abnormalities in cancer because cancer cells can present peptides from presumably non-coding regions that can activate T cell responses.

Keywords:Cancer, neoantigen, Immunocheckpoint inhibitors (ICIs), CTLA-4, Immunotherapy

■ Paper 63:

Vap-1 as predictor severity of covid-19 patients

Saja H Fadhil1, Lamy A Darwish2, Shayma Z Nada 3

1) Department of clinical laboratory Sciences , College of Pharmacy, University of Kerbala, Iraq

2) Assistant professor in Internal Medicine, Department of Medicine, Al Ameer University, College of Medicine

3) Assistant professor in Clinical Biochemistry, Department of Biochemistry, Kerbela College of Medicine

Abstract

Introduction: Vascular smooth muscle cells, adipocytes, and endothelial cells

with functional monoamine oxidase activity release vascular adhesion protein-1 (VAP-1), a copper-containing semi carbazide-sensitive amine oxidase (SSAO). The study's objective was to evaluate the VAP-1 level in patients with COVID-19. The 81 KDa sialo glycoprotein known as vascular cell adhesion molecule 1 (VCAM-1) is expressed by dendritic, macrophage-like, and cytokine-activated vascular endothelium cells. It belongs to the superfamily of immunoglobulins.

Material and method: The hospital central laboratory used the normal laboratory procedure to examine the serum and complete blood count. We used commercially available assays to evaluate VAP-1.

Results: Patients with mild COVID-19 had median blood levels of VAP-1 that were considerably greater than those with severe disease (3687.00 (1654.50) pg/ml versus 3664.00 (1055.50) pg/ml, respectively; $P = 0.009$). Conversely, patients with severe COVID-19 had median blood levels of VCAM-1 that were considerably greater than those with mild illness, measuring 271.31 (255.95) pg/ml against 198.30 (105.05) pg/ml, respectively ($P = 0.004$).

Conclusions: Vascular adhesion protein-1 (VAP-1) is more specific and sensitive than VCAM-1 for COVID-19.

Keywords: COVID-19, levels vascular adhesion protein-1 (VAP-1), D-dimer, coagulopathy, ferritin.

■ Paper 64:

Clinical and Electrophysiological Outcomes of Carpal Tunnel Release Surgery

Ali Abbas Hashim Almusawi¹, Fazel Alhimyari², Hayder Abdul-Amir Makki Alhindy^{3*}, Aumaima Tariq Abed⁴

- 1) Hammurabi College of Medicine, University of Babylon, Babylon, Iraq.
- 2) Hammurabi College of Medicine, University of Babylon, Babylon, Iraq.
- 3) Department of Physiology and Toxicology, Faculty of Pharmacy, University of Babylon. phar.hayder.abdul@uobabylon.edu.iq, Orcid: 0000-0001-6232-8501.
- 4) Department of Pharmacy, Al-Zahrawi University College, Karbala, Iraq.

Abstract

The most common entrapment neuropathy that commonly warrants operative treatment is Carpal Tunnel Syndrome (CTS), particularly in severe cases. The electrophysiological and clinical results of carpal tunnel release surgery had been studied in 102 hands of 84 patients. The study participants were grouped in terms of their extreme symptoms and electrophysiological test outcomes. Doctors carried out anterior carpal ligament release decompression surgery amongst patients who had experienced a. Postoperative assessment (14 months old). The carpal tunnel syndrome was progressive in severity. disclosed with the help of Nerve Conduction Studies, which gave five groups that began with moderate. Cases that had solely sensory impairment and later developed to severe cases where sensory and motor were involved.

Patients with mild conditions experienced total improvement, those with moderate symptoms showed notable improvement, and those with severe complaints only partially benefited from treatment. The investigated medical factors consisted of pseudoneuroma and anatomical abnormalities, together with unexplained origins. Older patients should receive early treatment when NCS is crucial, for both proper diagnosis and therapeutic planning. Standard flexor retinaculum release provides effective treatment for most of the population; however, severe cases might require additional therapeutic methods.

Keywords: Carpal tunnel syndrome, NCS, nerve, sensory, motor, electrophysiology.

■ Paper 65:

Ceruloplasmin as a Key Biomarker in COVID-19: Evaluating Diagnostic Accuracy and Relationships with CRP, Ferritin, and D-Dimer

Ali Hilal Jubair¹, Thuulfaqqar Kamil Yousef², Mazin J. Mousa³, Hayder Abdul-Amir Al-Hindy³

- 1) Department of Medical Laboratory Techniques, Islamic University, Babylon Branch, Hillah, Iraq
- 2) College of Medicine, University of Al Kafel, Karbala, Iraq.
- 3) College of Pharmacy, University of Babylon, Hillah, Iraq

Abstract

Background: COVID-19 is characterized by systemic inflammation, iron dysregulation, and coagulation abnormalities. Ceruloplasmin, an acute-phase protein involved in iron metabolism and oxidative stress, plays a significant role in disease pathogenesis. This study aimed to evaluate the diagnostic accuracy of ceruloplasmin and its relationship with CRP, ferritin, and D-dimer in COVID-19 patients.

Methods: A retrospective analysis was conducted on a clinical cohort of COVID-19 patients. The data included demographic information and biomarker measurements (ferritin, CRP, D-dimer, and ceruloplasmin). Statistical analyses included descriptive statistics, correlation analysis, ROC curve analysis, multiple linear regression, MANOVA, and Random Forest modeling. Missing data were imputed using mean substitution and outliers were win-sorized.

Results: Ceruloplasmin demonstrated good predictive performance (AUC = 0.873) for COVID-19 severity. Regression analysis revealed that CRP and ceruloplasmin levels were significant predictors of ferritin levels ($R^2 = 0.75$). MANOVA indicated significant differences in biomarker levels across sex and age groups, with CRP and ferritin showing the most pronounced differences ($p < 0.01$). The Random Forest model explained 78% of the variance in ferritin levels, with CRP and ceruloplasmin identified as the key factors.

Conclusion: Ceruloplasmin serves as a valuable biomarker for COVID-19, reflecting its role in iron metabolism and oxidative stress in the context of systemic inflammation. Incorporating ceruloplasmin assessments into clinical management protocols may improve risk stratification and personalized treatment strategies. Future studies should explore the mechanistic role of ceruloplasmin in COVID-19 pathogenesis and its potential as a therapeutic target.

Keywords: Ceruloplasmin, COVID-19, CRP, D-dimer, Ferritin, biomarkers, iron homeostasis.



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