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M. S. Ramaiah Medical College, Bengaluru, Karnataka, India.

A New Era in Healthcare: NAMSCON 2023's Visionary Journey

Following are the abstracts presented during NAMSCON 2023 at 63rd Annual conference of NAMSCON from October 6th-8th, 2023 hosted by M.S. Ramaiah Medical College Bengaluru, Karnataka, India.

Abstract 1

Comorbidity in patients with Dhat syndrome: A retrospective study from a tertiary care hospital of North India

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Background: Dhat syndrome is a common culture-bound clinical entity that presents with a range of psychological and somatic symptoms. Dhat syndrome is not limited to the Indian subcontinent only and has been seen as a global phenomenon.

Aim: To assess the prevalence of comorbidities in patients with Dhat syndrome attending Marito-Psychosexual Clinic (MPC) in a tertiary care hospital of North India.

Material and methods: By using a retrospective study design, the treatment records of patients attending the Marito-Psychosexual Clinic (MPC) since 2020 were reviewed and data of patients diagnosed with Dhat syndrome were analyzed.

Results: The average duration of illness was 7.55 yrs, and the mean number of follow up was 2.63. Around half (46.8%) of the study population visited OPD on their own, followed by referrals from Internal Medicine and Urology. Three-fourth of the study population had poor sexual knowledge. Among psychiatric comorbidities, depression (36.2%) was more common than anxiety (25.5%), while in sexual symptoms, premature ejaculation (36.2%) was more prevalent than erectile dysfunction (31.9%). Only one patient had an alcohol use disorder, and two patients suffered from hypertension. Antidepressants were prescribed to most patients, among which paroxetine (38.3) was most commonly prescribed.

Conclusion: A range of comorbid sexual and psychiatric disorders is often found in patients with Dhat syndrome that are considered to be arising out of distress associated with loss of semen.

Abstract 2

Optimizing survey with real-time data capture for quality insights

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Introduction: Real-time data collection using mobile apps such as Open Data Kit (ODK) provides immediate data entry, abolishing the need for time-consuming paper-based techniques. This results in faster analysis and assists in timely decision-making. Rapid data gathering in malaria-endemic locations allows for prompt identification of high-risk locations, allowing to plan for targeted interventions. Furthermore, real-time information allows authorities to quickly identify outbreaks, follow illness patterns, and effectively allocate resources. Because mobile devices are easily accessible, data may be collected in rural or underserved locations, increasing coverage. Furthermore, these applications encourage paradata by providing features like timestamps and geo-location, assuring data quality and integrity in real-time. This considerably improves monitoring and assessment procedures.

Material and methods: Comprehensive research is presently going on in line with India's malaria elimination 2030 goal to assess community perspectives and health system preparedness for high malaria endemic states of India. This study analyzes community-level service availability, accessibility, utilization, as well as healthcare-seeking behavior for febrile diseases. It also investigates LLIN Long Lasting Insecticidal Net availability utilization. Furthermore, the study is assessing community knowledge, attitudes, and practices for malaria prevention and control. It also examines logistics, supply chain, efficacy of monitoring, and Hospital managment information system (HMIS) in the malaria program. The study included 37,976 households from 47 districts in 11 malaria-endemic states in India.

Face-to-face interviews are conducted by trained research teams (trained on survey methodology, interview procedures, ODK usage)

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using portable mobile/tablets and ODK platform for electronic data gathering. The open-source data management platform ODK enables the design of configurable digital forms, offline data gathering, and centralized server synchronization. This improves real-time data collecting, Global positioning system monitoring, and performance evaluations while also increasing responsibility and decision-making. In this study, ODK plays a critical role, employing paradata such as timestamps and geo-locations for precise quality tracking and assurance, hence improving the whole research process.

Results and discussion: Timestamps and geo-locations are key aspects of the ODK platform that improve data quality in a variety of ways. Timestamps offer an exact record of when data are acquired, assuring temporal precision and allowing for real-time survey progress tracking. Geo-locations, on the other hand, pinpoint the specific location of data collection, providing geographical context to the information. This assists in determining whether data are being captured in the designated locations and enables geographical analysis. Together, timestamps and geo-locations improve data integrity, minimize mistakes, increase accountability, and allow for the rapid discovery of discrepancies, guaranteeing that the data gathered with ODK is of the greatest quality for informed decision-making and successful research outcomes.

Conclusion: In disease surveys, real-time integration of paradata, notably timestamps and geo-locations, is critical. These characteristics provide instant temporal and geographical context, assuring data accuracy and allowing quick action. Real-time data are critical for detecting outbreaks, analyzing trends, and allocating resources effectively. Data with more precision and timeliness improves our capacity to make educated decisions, eventually boosting disease monitoring efforts and increasing public health outcomes.

Keywords: Malaria, ODK, Real-time data, Paradata, Data quality

Abstract 3

Incidence of adverse drug reactions (ADR) among tuberculosis patients initiated on daily drug regimen from coastal Karnataka

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Introduction: Approximately, 10 million people worldwide contract tuberculosis (TB) every year. Patients who are initiated on anti-tuberculosis treatment (ATT) may experience a wide range of adverse drug reactions (ADR). The study aimed to determine the prevalence of ADR among newly diagnosed TB patients receiving daily drug regimen with fixed dose combination (FDC) treatment under the National Tuberculosis Elimination Program (NTEP).

Material and methods: A community-based prospective cohort study was carried out in Udupi district, Karnataka. Over 12 months, all newly diagnosed tuberculosis patients of either gender were included from 63 primary health centers, and ADRs were recorded by personal interviews.

Results and discussion: A total of 698 patients were enrolled. The majority of tuberculosis patients, 446 (63.9%), were males, and 252 (36.1%) were females. Pulmonary cases were 510 (73.1%) and 188 (26.9%) were extra-pulmonary. During the intensive phase (IP) of treatment, 480 (68.8%) patients reported ADRs, and 31 (6.5%) had ADRs during the continuation phase. Out of 480, 140 (29.25%) had gastritis, 132 (27.5%) had vomiting, 105 (21.9%) had nausea, 60 (12.5%) had skin rashes, 27 (5.6%) had drug-induced hepatitis, and 16 (3.3%) had vision problems. Among 480 patients with ADRs, 462 (96.3%) had successful treatment outcomes, the remaining 17 (3.5%) resulted in death, and 1 (0.2%) had treatment failure.

In the current study, 480 (68.8%) patients experienced ADRs, and all of the patients were symptomatically managed and were continued on a daily FDC regimen without changing the regimen or dosage. These findings were similar to the results of Sinha *et al.* (69%) in India. Incidence of ADR in the present study was lower (68.8%) in comparison to studies by Massud *et al* (81%), Ahmad *et al* (72%), and Ganiyu *et al* (99%) from Nigeria.

Conclusion: Adverse events were more common in the first few months of treatment than in subsequent months. All ADRs were effectively managed, and most had successful treatment outcomes. Proper counseling and management of ADRs will aid in improving treatment adherence.

Keywords: Adverse drug reactions, Tuberculosis, Daily drug regimen, NTEP.

Abstract 4

Augmenting cervical cancer screening services through the cost-effective screen and treat approach - implementation research from the rural area of Punjab

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Introduction: Cervical cancer is the second most common cancer among women in India with 6,04,127 new cases and 3,41,831 deaths as per GLOBOCON (Global Cancer Observatory) 2020. It is the only cancer that can be prevented due to its long latency period offering a golden opportunity to detect and treat cancer in its pre-malignant stage itself. Despite the availability of well-established screening programs under the National Program for Prevention and Control of Cancer, Diabetes, Cardiovascular diseases, and Stroke (NPCDCS) and robust national guidelines, the screening rates in India are abysmally low, especially in rural areas. Hence, we plan to undertake this project with an aim to screen the target population for cervical cancer and improve screening uptake in Punjab.

Material and methods: The study will be implementation research and will be conducted in the Malwa region of Punjab. Women between 30 and 60 years age group eligible for cervical cancer screening (sexually active, not hysterectomized, not undergoing cervical cancer treatment) with a sample size of 30,000 will be enrolled. Firstly, a baseline survey will be done to assess the capacity of healthcare workers and infrastructure to perform screening. Secondly, the peripheral health workers will be provided hands-on training to perform screening with VIA (visual inspection with acetic acid) and thermal ablation to treat cervical premalignant lesions. Thirdly, house-to-house visits will be done by the field investigators to assess knowledge, attitude, and screening practices regarding cervical cancer. The eligible women will be invited to

undergo screening via a "Screen and treat" approach with VIA followed by thermal ablation on a fixed day of the week. Patients requiring further management will be referred to AIIMS Bathinda.

Statistical analysis: The quantitative data analysis will be done using SPSS v. 23 (IBM, software). The endpoints will be expressed as mean and standard deviation (if parametric quantitative data) or as proportion (if categorical data). The appropriate statistical test will be applied for analysis. In-depth analysis (KAP) Knowledge, Attitude, Practice with women will be done to evaluate the perception towards screening of cervical cancer. Thematic analysis will be the analytical framework used for the qualitative analysis. For qualitative data, in-depth interviews will be conducted by the research team members.

Discussion and conclusion: Through this project, we aim to sensitize, screen, and offer treatment to about 30,000 women in the target age group. And at the same time, we will be able to understand and document the perceptions of the women which refrain them from participating in the screening programs and develop effective strategies that can help resolve their queries. The experience gained through this project will help us to further our efforts in similar resource-constrained settings.

Keywords: Cervical cancer, Screening, Preventive health, Non-communicable disease

Abstract 5

Satisfaction of home-isolated COVID-19 patients on their screening, monitoring, and management through telemedicine

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Introduction: During the COVID-19 pandemic, while access to healthcare services was hampered, telemedicine emerged as an ideal solution to address this issue. A telemedicine service called 'health-at-home' was established at St. John's Medical College and Hospital to provide healthcare services for isolated asymptomatic and mildly symptomatic COVID-19 patients. The objective of the study was to understand the overall satisfaction of the patients towards telemedicine services.

Method: Sampling was purposive. The online feedback through 12 questions was sought from all the on-boarded patients. Patients were screened, monitored, treated, and referred over teleconsultation based on home isolation protocols defined by health authorities. Patients with uncontrolled comorbid conditions and severe COVID symptoms were excluded. Descriptive analysis was performed on collected data.

Results and discussion: The feedback was provided by 151 of 201 patients on three service domains. The highest ratings for clinical, operational, and technological domains were provided by 85%, 75%, and 57% of patients, respectively. 93% of the patients agreed they would recommend these services to their family and friends. The feedback received for this initiative helped to promote the use of telemedicine services across other specializations in the hospital for the patients who otherwise were not able to access hospital services.

Conclusion: The COVID-19 telemedicine service was perceived to be a good initiative by patients who availed the service. Though there is scope for further improvement with technology, the overall package was well received by the beneficiaries.

Keywords: COVID-19, Telemedicine, Home-health, Feedback, Satisfaction

Abstract 6

Digital library of court cases: A unique initiative of a large tertiary care teaching hospital in India

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Background: The main hospital of AIIMS, with more than 1500 beds, has on its board about 100 ongoing court cases which are under adjudication in different hon'ble courts of New Delhi. The litigations pertain to service matters of employees, cases of patient treatment, hospital procurement, and rare diseases matters etc. The spread of 100 cases in different hon'ble courts of New Delhi can't be gleaned through for the vital indices at a single point in time through physical records.

Material and methods: We devised an intervention to deal with this problem. We populated the data of these 100 ongoing cases onto an excel sheet under the following key indicators: title of the matter, category, under adjudication for many months, handled by which advocate, next listed of hearing, last order in the matter, and so on. We exported this excel sheet into a google spreadsheet so that it could be simultaneously viewed by the faculty-in-charge, senior administrative assistant, and the data entry operator who has to deal with the matters. Unlike physical paper books, which can't be perused for the key indicators, the single spreadsheet made it possible to look into the journey of all the ongoing cases in a single stretch. We inserted the pdf file of the last order in one of the cells of google sheet against each case, which greatly reduced our time and efforts in navigation to the websites of different hon'ble courts in order to get access to the last orders. We implemented a proactive approach by scheduling reminder emails to our legal counsels. These gentle reminders are automatically dispatched at a set time, three days prior to the impending date of hearing in a given matter.

Results and discussion: On three different occasions in the rare-diseases matter, the initiative saved us from adverse orders/contempts. In two different cases, with timely compliance of the instructions of the hon'ble courts, we could complete the cause of actions from our side and contribute to the curtailment of the litigation curve. We could generate data fields for the analysis on the time duration of adjudication of a matter and final outcome (category-wise/advocate-wise), which would help in the future allocation of similar matters to the panel of counsels of All India Institute Of Medical Sciences, New Delhi.

Creation of digital records from the record of paper books for posterity and further analysis.

Conclusion: This initiative improves our monitoring and follow-up strategy in the matters and significantly minimizes any last-minute urgencies, enhances our reputation and communication, and

reaffirms our dedication to safeguarding the interests of the institute before the hon'ble courts through our legal counsels representing us. It provides an opportunity to monitor the entire journey of court cases through a single spreadsheet and holds great relevance, especially when there is a bulk of court cases to be monitored and followed-up. It could contribute in reducing the litigation curves in different matters as follow-ups on the specific cause to actions get strengthened.

Abstract 7

The emergence of parvovirus B19 as a pathogen in acute encephalitis syndrome (AES): A call to action

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Introduction: Parvovirus B19 is primarily known to cause erythema infectiosum (fifth disease) or asymptomatic infection in children, anemia, and pancytopenia in immunocompromised hosts, the transient aplastic crisis in patients with hematological malignancy. Despite the scarcity of data, in recent years, there has been a gradual increase in parvovirus B19-associated central nervous system infections manifesting in various ways, such as encephalitis, encephalopathy, meningitis, and peripheral neuropathy. Here, in this case series, we have tried to emphasize the importance of the role of parvovirus B19 as a culprit of acute encephalitis syndrome (AES) and its prompt diagnosis by molecular methods for early diagnosis and management.

Material and methods: This cross-sectional study was conducted from March 2022 to December 2023. Clinico demographic data of each patient was collected. MRI was done in patients wherever required. The Cerebrospinal fluid (CSF) and serum samples were collected from all the AES cases as per WHO criteria and immediately transported to the laboratory, maintaining the cold chain and at room temperature for detection of viral and bacterial etiology, respectively. The samples were subjected to specific Immunoglobulin M (IgM) Enzyme-Linked Immuno Sorbent Assay (ELISA) tests against Japanese encephalitis virus, dengue virus, and scrub typhus. Nucleic acid was extracted and subjected to multiplex real-time PCR assay using frontotemporal dementia (FTD) Neuro-9 Panel and Tropical Fever Panel (Fast Track Diagnostics, Luxembourg), JE Virus RT-PCR, and Zika virus real-time PCR. CSF samples were subjected to Gram staining and bacterial culture and sensitivity. Parvovirus B19-positive samples were subjected to sequencing.

Results and discussion: Of the 160 patients with, acute encephalitis syndrome the etiology (AES) could be established in 103 patients (64.3%). Among these 103 patients, 75 (72.8%) cases had viral etiology. Of the 75 patients with viral agents, 8 cases (10.7%) had parvovirus B19 infection with genotype 3b. The age ranged from 2 to 52 years with a male-to-female ratio of 1:1. Four of these eight cases had underlying comorbidities (diabetes, kidney disease, anemia, protein-S deficiency). Fever was the most consistent symptom in all eight cases. Altered sensorium and seizure were present in 5 (62.5%) cases each, followed by headache in 3 cases (42.8%). Blurring of vision, weakness of limbs, and rashes were also among the significant complaints. MRI was abnormal in all the patients. The mortality rate was 25% (2 of the eight patients died).

Conclusion: The present study findings demonstrate that parvovirus B19 is a notable cause of AES. To validate these findings and provide guidance for effective public health interventions, it is recommended that a multicentric epidemiological study be conducted.

Keywords: Acute encephalitis syndrome (AES), Parvovirus B19, Molecular diagnosis, Multiplex PCR

Abstract 8

Impact of COVID-19 pandemic on national tuberculosis elimination programme services in Bangalore City: Quantitative results of a mixed method study

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Background: The COVID-19 pandemic led to a global reduction of 25% in expected tuberculosis (TB) detection in many countries, resulting in a 13% increase in TB deaths, bringing us back to TB mortality levels of the year 2015. India, being the country with the highest burden of tuberculosis, we are still moving towards the elimination of TB by 2025, which is five years before the sustainable development goal. The COVID-19 pandemic posed a great threat to the activities towards the prevention, control, and management of other diseases as the resources were diverted towards tackling the pandemic. Hence, like any other disease, the activities of the National Tuberculosis Elimination Program (NTEP) also suffered. The objective was to assess the impact of the COVID-19 pandemic on NTEP services – diagnosis, treatment, follow-up, and support services and to identify the challenges faced by the patients to avail NTEP services during the pandemic.

Methodology: A mixed method study – an explanatory sequential study of quantitative followed by qualitative research was done by 5-year record analysis from Jan 1, 2017, to Dec 31, 2021, to assess the impact of the COVID-19 pandemic on NTEP services – diagnosis, treatment, follow-up, and support services. TB units were selected randomly one each from eight Bruhat Bengaluru Mahanagara Palike (BBMP) zones, and five cohorts of pulmonary TB patients were recruited by systemic random sampling and interviewed from the pre-pandemic period (From September 25, 2019, to March 24, 2020) and during COVID pandemic (March 25, 2020–June 30, 2021) with equal number of 304 cases in pandemic and pre-pandemic period to identify the challenges faced in obtaining NTEP services.

Results: NTEP activities were not hampered significantly despite the ongoing pandemic. The treatment success rate remained the same over the years, with a reduced failure rate and loss to follow-up case detection. Patients faced challenges during the initial period of the pandemic in accessing healthcare facilities for treatment and follow-up, which was later tackled by the provision of drugs at their door steps with telephonic follow-up.

Conclusion: Despite the challenges posed by the pandemic, NTEP services have demonstrated remarkable resilience, finding innovative ways to continue their critical work of TB control while navigating the uncertainties and disruptions caused by COVID-19.

Key points: NTEP, COVID-19, Challenges, Impact

Abstract 9

C-lobe of lactoferrin, the Swiss army knife of the body: Understanding the potential of the moonlighting protein

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Lactoferrin is an 80-kDa bilobal glycoprotein that is abundantly found in most exocrine secretions of the body and in the secondary granules of neutrophils. It acts as an innate and nutritional immunity warrior. Lactoferrin consists of two equal halves, designated as N-lobe and C-lobe, each of which contains one iron-binding site. The N-terminal half, designated as N-lobe (Ala-Arg341), and C-terminal half, designated as C-lobe (Tyr342-Arg689), have similar iron-binding properties, but both the lobes have additional functional activities. While the N-lobe of lactoferrin has been extensively studied and is known for its enhanced antimicrobial effect, the C-lobe of lactoferrin mediates various therapeutic functions which are still being discovered. Lactoferrin was hydrolyzed using three proteases: trypsin, pepsin, and proteinase K, which have different specificity requirements. While the two enzymes, pepsin, and trypsin, are found in different organs in the body and display their function at different pHs, proteinase K is obtained from the fungus *Tritirachium album* Limber. All three proteases generated an identical and fully functional C-lobe. Though the C-lobe produced by proteinase K hydrolysis showed minor differences at the C-terminal region, the N-terminal regions of the C-lobes were identical. This demonstrated that the lactoferrin molecule has evolved itself to be resistant to proteases as it gets cleaved by all three proteases at the same peptide bond Arg341-Tyr342. The potential of the C-lobe as an antifungal agent, antidiabetes agent, and in the treatment of gastropathy has been demonstrated through various functional and structural studies. It is expected that the C-lobe of lactoferrin can be developed as a molecule of interest for drug design as it has shown remarkable stability and therapeutic potential.

Abstract 10

Effect of regular physical activity on arterial stiffness in adolescents

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Background: Cardiovascular diseases (CVDs) have become a significant and growing healthcare risk with physiological and economic repercussions. Recent research has reported that CVD, which previously was exclusive to older populations, has become more prominent in younger generations, and arterial stiffness has been recognized as one of the most important predictors of CVD at all ages.

It is well known that the obesity epidemic in children is strongly related to the increase in sedentary lifestyles and screen activities. This trend seems to be more evident during the summer break when children tend to gain body weight and lower cardiovascular fitness. Therefore, the promotion of physical activity in children's lifestyles is paramount to counteract both inactivity and obesity; in fact, by increasing aerobic fitness levels and lowering blood pressure and arterial stiffness, a more active lifestyle may prevent the future. The study aimed to compare the effects of 4 and 8 weeks of play-based, supervised exercise during summer break versus an unsupervised break on cardiovascular function in adolescent children.

Material and methods: Twenty-two subjects were divided into a 4-week exercise group (age 10.1 + 1.3 years), an 8-week exercise group (age 9.4+ 1.7 years), or a control group (age 10.0 + 1.3 years). The activity groups participated in a supervised summer camp for 6 h/day, 5 days/week, including a discontinuous play-based physical activity program and a healthy lifestyle, while the control groups were told to keep their regular summer break routines. Anthropometrics, pulse wave velocity, augmentation index, blood pressure, and peak oxygen consumption were evaluated before and after the interventions.

Results and discussion: Arterial stiffness index significantly decreased after 4 and 8 weeks in the active groups, while pulse wave velocity showed no significant changes in all groups. Mean arterial pressure decreased, and peak oxygen consumption increased significantly in the eight weeks group.

Conclusion: These data suggest that eight weeks of supervised play-based activity yield several cardio-beneficial results in adolescents, which may act as clinical prophylaxis throughout their lifetime. Recent studies have also shown that sedentary children will achieve the best results from a fitness program. Therefore, the sport-2-stay-fit study may be recommended in children and adolescents with a chronic disease or physical disability.

Keywords: Arterial stiffness, Pulse wave velocity, Adolescents

Abstract 11

Association of long-term metformin therapy and vitamin B12 deficiency in type 2 diabetes mellitus patients and its effects on neuropathy.

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Background: The long-term use of metformin in the treatment of diabetes mellitus mediates vitamin B12 deficiency and may contribute to increasing the substantial burden of peripheral neuropathy in type 2 diabetes mellitus (T2DM) patients. Our study aims to determine vitamin B12 deficiency in T2DM patients in relation to the duration and peripheral neuropathy.

Objectives: 1. To examine the correlation between B12 deficiency in relation to the duration of metformin therapy in T2DM patients. 2. To determine the association between vitamin B12 deficiency and severity of peripheral neuropathy in T2DM patients on metformin.

Methodology: Based on the literature review, in a previous study conducted by Ahmed Muntingh *et al* was found the prevalence of vitamin B12 deficiency was 28.1%. In the present study expecting a similar result, considering 10% absolute precision and confidence level of 95%, the sample size was 78 patients. A cross-sectional observational study was done for three months which included 78 patients who were taking metformin. Patients who were diagnosed with malabsorption syndrome, alcohol intake, gastric/intestinal

surgeries, and patients on vitamin B12 supplements were excluded. 42 subjects were males, and 36 subjects were females. Vitamin B12 was measured using Vitros 5600 Autoanalyzer; individuals with vitamin B12 levels < 200 pg/ml were considered deficient. Neuropathy was assessed using the Toronto Clinical Neuropathy Scoring System. The relationship between vitamin B12 deficiency and metformin use and its correlation with the presence of peripheral neuropathy was statistically analyzed using the chi-square test.

Results and discussion: The prevalence of vitamin B12 deficiency in our study was 65% in our study. There was a negative correlation between the duration of DM with vitamin B12, which was statistically significant with a *p*-value 0.001. A statistically significant difference was found between neuropathy and vitamin B12 with *p* p-value 0.037. Serum vitamin B12 levels significantly decreased as the duration of diabetes increased.

Conclusion: Screening of T2DM patients on metformin can help us in early detection and correction of vitamin B12 deficiency. Early management of peripheral neuropathy with vitamin B12 supplements can improve the quality of life in these patients.

Keywords: Metformin, Vitamin B12, Peripheral neuropathy

Abstract 12

Faculty perspective of online teaching-learning of human anatomy: A qualitative study

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Introduction: The COVID-19 pandemic brought heretofore unseen problems for teaching and learning for all, more so for courses having laboratory experience as an essential curriculum component. Difficulties experienced by the students, the faculty, and the management of the institutions were unique to each. The present qualitative study is to understand these problems and suggest solutions.

Material and methods: The present study was conducted between January and April 2022. Seven faculty members of three colleges of Karnataka involved in the online teaching of human anatomy were included. A two-stage process was used. The first stage involved an open-ended questionnaire. Semi-structured interviews were conducted during the second stage. Data were analyzed by Delphi and Thematic analysis.

Results and discussion: Codes were generated during the first stage, and these helped guide the semi-structured interviews in the second stage. Themes were derived to elicit facilitators and barriers faced by the faculty. Instructor presence, ability to hold students' attention by various strategies, social presence of students, cognitive thinking by way of problem-solving, delivery mode of instruction material, synchronous and asynchronous learning methods, and access to technology were the major themes that emerged.

Conclusion: Instructional strategies employed by the faculty to overcome the difficulties and the themes that emerged will help devise a stronger process for learning human anatomy. A blended approach appeared to be a favorable one for achieving a sense of fulfillment in the teaching process.

Abstract 13

Prevalence of pre-diabetes among rural adults of South Karnataka

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Background: Pre-diabetes, an intermediate stage preceding type 2 diabetes, requires targeted interventions. This study explores prediabetes prevalence and contributing factors in adults in rural South Karnataka, informing early intervention and healthcare planning for diabetes prevention.

Methods and analysis: This current study is a descriptive cross-sectional study as part of an ongoing cluster randomized controlled trial registered in the Clinical Trial Registry of India (CTRI/2023/03/050421). Significantly, a notable gap exists in prior research regarding pre-diabetes prevalence within the specific rural areas of southern Karnataka, underscoring the novelty of this study. The study population, established through complete enumeration and specific inclusion criteria (age 20–50, residing in the village for over six months) is being assessed using comprehensive questionnaires encompassing demographic, lifestyle, anthropometric, and clinical measures, along with Indian Diabetes Risk Score (IDRS) and Prediabetes Risk Evaluation Scoring System (PRESS). Participants with fasting blood sugar levels between 100 and 125 mg/dL are classified as pre-diabetic. Logistic regression analyses, adjusting for potential predictors, are conducted to identify contributing factors for pre-diabetes.

Result: The study found an overall pre-diabetes prevalence of 31.5% (95% CI: 29.9%–33.1%). Females showed a high prevalence (33.3%). According to the PRESS score, the pre-diabetes risk was 61%, and IDRS is 43%. Notably, waist-to-high ratio and age emerged as significant predictors via adjusted logistic regression.

Conclusion: The prevalence of pre-diabetes among nearly a third of the study participants in our study in rural South Karnataka, with females exhibiting higher rates. Significantly, waist-to-height ratio and age are the key factors in predicting the risk of pre-diabetes.

Keywords: Prevalence, Pre-diabetes, Southern Karnataka, Rural population, Risk factors

Abstract 14

Association between common mental disorder and glycemic control in women with gestational diabetes: A mixed-method study.

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Background: Gestational diabetes mellitus (GDM) is associated with an increased risk of mental health disorders among pregnant women. Poor mental health can negatively impact glycemic control in women with GDM, leading to adverse outcomes for both the mother and the baby.

Aim: To determine the prevalence of common mental disorder (CMD) in women with GDM and its association with poor glycemic control. Additionally, to explore the reasons and coping strategies for CMD in women with GDM.

Methods: A sequential explanatory mixed-method study was conducted among 351 women with GDM visiting a tertiary care hospital. The prevalence of CMD was assessed using Generalized Anxiety Disorder-7, Patient Health Questionnaire-9, and Perceived Stress Scale. Glycemic control was determined based on 2-h post-prandial blood glucose levels. In-depth interviews were conducted with six women who screened positive for CMD and had poor glycemic control. Data were analyzed using SPSS v23 and stats v12. Chi-square test and Poisson regression were performed, and adjusted prevalence ratios (aPRs) were reported.

Results: The prevalence of CMD was found to be 19.08% (95% CI: 15.32%–23.52%), with 18.2% (95% CI: 14.5%–22.6%) anxiety symptoms 8.3% (95% CI: 5.8%–11.6%) depressive symptoms, and stress each. CMD was significantly related to poor glycemic control (aPR: 1.58; 95% CI: 1.23–2.03; p-value < 0.001). The qualitative analysis revealed individual, family, health, and facility factors influencing mental health and glycemic control.

Conclusion: Common mental health disorders are prevalent in women with GDM. It has a negative association with glycemic control. Implementing a routine screening program in the ANC clinic can aid in early identification and prompt management of the CMD and its associated complications.

Keywords: Common mental disorders, GDM, Glycemic control, Poor mental health

Abstract 15

Scalable simulation models in sustaining quality education in surgery (Contributing to SDG 4)

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Background: Quality education is one of the sustainable development goals (SDGs) adopted by the United Nations. In health professional education, providing quality education is the prime motto. The National Medical Commission also recommends simulation-based skill training to implement quality education.

Material and methods: Our objective is to develop scalable, low-cost, indigenous models to train medical students in basic surgical skills. Using cost-effective materials like a synthetic sponge or thermacoal, thin brown color rexine or foam sheet, kids craft clay, plaster of Paris, glue, unsterile gloves, polythene sheet, balloons, socks, cloth, woolen threads, simulation models were developed for breast lumps, hydrocele, and subcutaneous swellings like lipoma, sebaceous cyst, neurofibroma, a dermoid cyst. Validation of the models was done by nine surgical experts about the fidelity and usefulness of the models. Undergraduate medical students demonstrated clinical examination signs for subcutaneous swelling, hydrocele, and breast lump in the developed models. Surgical interns were given hands-on training in subcutaneous swelling excision procedures and hydrocele surgery using these models. Student's performance was assessed using a checklist and their feedback about the model was obtained. The results were analyzed.

Results & discussion: Surgical experts opined that the models were realistic, and when used as a hybrid model in a mannequin, it served as a high-fidelity simulation model. Students' feedback reflected that they understood clinical examination and surgical steps well with this model. Surgical interns felt that they had immersive experiential learning. Students' assessments revealed that their performance improved. The highlights of this model will be its simplicity of production, scalability, low cost, portability, easy reproducibility, no previous existing model, and hands-on training possible especially in low resource settings. These models can be archived for subsequent batches of students, and the scientific information and evidence generated in this study will help medical educators to adapt different simulation-based teaching–learning strategies for the current Competency-based medical curriculum rolled out by the National Medical Commission to Sustain Quality Education (SDG4 -Vision 2030) and lifelong learning which is one of the roles expected of Indian Medical graduate.

Conclusion: Expected outcomes of these models would be: (1) Professionally skilled medical students with a confident approach to basic surgical problems. (2) Creation of a uniform, unbiased, and objective measure for both teaching and assessing the performance of students. (3) Contributing to the SDG. (4) Vision 2030 of quality education and promotion of lifelong learning.

Keywords: Simulation models, Surgery, Indigenous, Skill training

Abstract 16

A study on apolipoprotein (A & B) levels and ABCA1 expression in treatment-resistant schizophrenia

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Background: Dyslipidemia and metabolic syndrome in patients with schizophrenia (SCZ) increase the vulnerability to the development of cardiovascular diseases and increased mortality in SCZ patients. Literature suggests that dyslipidemia is induced by antipsychotics and is also contributed by the disease itself. Apolipoproteins (Apos) and ATP-binding cassette transporter (ABCAs) play a vital role in lipid transport. Very few studies have studied the role of apolipoproteins in SCZ. ABCA7 and ABCA13 variants are shown to have an impact on SCZ, but ABCA1 has not yet been explored. Moreover, these lipid transport markers have not been studied with respect to treatment-resistant schizophrenia (TRS). This study aims to correlate the serum lipid profile parameters, apolipoprotein levels, and ABCA1 gene expression levels in TRS cases and healthy controls.

Material and methods: 46 non-diabetic, non-hypertensive, treatment-resistant schizophrenic individuals diagnosed according to DSM-5 criteria and resistant to first-line antipsychotics were recruited as cases. 30 age- and sex-matched apparently healthy individuals with no past history of mental disorders were taken as controls. 6 mL of peripheral blood was collected under aseptic conditions. Serum levels of lipid profile parameters and

apolipoproteins (A & B) were assessed on an autoanalyzer. Total RNA was extracted from peripheral blood mononuclear cells and converted to cDNA, and relative gene expression of ABCA1 was evaluated using real-time PCR technology. Statistical analysis was done using GraphPad Prism 9.1.2.

Results and discussion: Significantly elevated levels of triglycerides and Apo-B were observed in resistant cases when compared to healthy controls [Median (IQR) of TG: 150.2 (94.8) vs. 104.5 (53.8) mg/dL; and Apo-B: 93 (27.8) vs 77.7 (24.32) mg/dL, respectively]. ABCA1 was significantly downregulated in TRS cases with a fold change of 0.21 when compared to controls. Dysregulated Apo-B levels and ABCA1 expression indicate a significant disruption in lipid transport mechanisms contributing to dyslipidemia in SCZ.

Conclusion: Potential disruption of cholesterol homeostasis may be a contributor in TRS. Identifying these dysregulations early may help in personalized treatment approaches in SCZ, especially in treatment resistance.

Keywords: Schizophrenia, Dyslipidemia, ABCA1, Apolipoproteins, Treatment-resistant schizophrenia

Abstract 17

Gustatory dysfunction in euthyroid primary hypothyroidism

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Background and Introduction: Hypothyroidism is a clinical condition due to inadequate thyroid hormone production or inadequate effect on the target tissues. The thyroid hormone has extensive effects on various body functions. It can affect sensory modalities like taste sensations, which thyroid function changes might impair. The exact mechanism of hypogeusia in hypothyroidism is not known. Putative mechanisms may be alteration at molecular and chemical levels in the taste receptors or maturation and specialization of taste buds modulated by the thyroid hormone.

Objectives: The study assessed gustatory functions in patients with primary hypothyroidism who are euthyroid on supplemental hormone therapy with levothyroxine over six months' duration and to evaluate the association of gustatory dysfunction, if any, with the serum TSH levels.

Material and methods design: This analytical community-based cross-sectional study was conducted following participants' ethical approval and written informed consent. The study protocol was approved, and ethical clearance (MSRMC/ EC/SP-11/02-2021) was obtained from the Institutional Ethics Committee. **Setting**: The study was conducted in a tertiary healthcare center in Bangalore, Karnataka, India. **Participants**: 68 subjects participated in this study, 34 primary hypothyroid patients and an equal number of healthy controls. **Interventions**: Gustatory sensations were assessed by the triple drop test, and scores were given depending on the identification of the tastants (sweet, sour, salty, and bitter). The taste scores were compared, and the association between TSH levels and gustatory parameters was evaluated.

Results and discussion: **Results**: Overall taste scores were lesser in hypothyroid patients. This depicted that their taste thresholds were increased and were statistically significant ($p < 0.001$), though the association between the degree of hypogeusia and TSH levels was not statistically significant. **Discussion**: Taste sensation gets altered in several disorders like endocrine disorders, nutritional disorders, diabetes mellitus, and chronic liver and kidney diseases. Gustatory preferences can get modulated by physiological alterations in the internal signal transduction pathways. Serum sodium and blood glucose levels also affect taste sensations. Such observations lead to the speculation that gustatory responses may change in endocrine disorders like hypothyroidism, which causes a myriad of metabolic alterations. Loss of appetite is commonly seen as a presenting symptom of hypothyroidism. In a study by McConnel *et al*, hypothyroid patients' smell and taste functions were tested. Dysgeusia was observed in 50% of the patients, with bitter taste being hampered the most. The study concluded that both smell and taste deficits are observed in hypothyroidism, which could be reversed with treatment.

Conclusion: Patients with primary hypothyroidism can suffer from hypogeusia, which may revert to normal once they achieve euthyroid status with levothyroxine supplementation. However, this has not been conclusively shown in studies. Our study concluded that hypogeusia was present in primary hypothyroidism despite patients being euthyroid on hormone supplementation, and it was not dependent on the serum TSH levels.

Keywords: Gustatory, Hypogeusia, Primary hypothyroidism, Euthyroidism, Taste threshold

Abstract 18

Outcomes following preconception and antenatal counseling in women having previous children with congenital disorders: Experience from perinatology clinic in a tertiary care institute

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Background: In this genomic era, preconception, antenatal counseling, and genetic testing are vital for the family to reach a decision and take action.

Aim: To study the pregnancy and neonatal outcomes following preconception and antenatal counseling in women having previous children with congenital disorders (genetic or structural).

Method: In this observational study, the profile of the eligible women and their families with previous children having congenital disorders were collected from our perinatal database for one year (June 2022–May 2023). Counseling and advice regarding recurrence risk, prognosis, and testing for further decision were offered by the genetic counselor and the perinatology team.

Results and discussion: 50 women with the eligibility criteria attended our perinatal clinic during the study period: 28 in preconception and 22 in antenatal period. Self-referrals (10%) were lesser than in other studies 11 had previous fetuses/children with structural defects. Of the remaining, 33 fitted into specific genetic conditions: 7 hematological, 6 chromosomal, 7 storage disorders, 4 skeletal dysplasia, 4 muscular, 1 hepatic, 1 pulmonary,

1 mitochondrial, 1 dermatological, and 1 metabolic. The recurrence risk was explained according to the inheritance pattern. Testing was advised in the couple or previous child, and 21 opted to do the same. The diagnosis could be made in 12/21 cases only after genetic testing. Antenatal fetal testing was advised in 17. Nine conceived: 3 were in advanced gestation; 6 underwent testing, and reports were normal.

Conclusion: Preconception and antenatal testing and counseling have significantly helped the couple by making the diagnosis, understanding recurrence risk [91% (30/33)], and planning carrier/fetal testing [95% (20/21)] accordingly.

Keywords: Perinatology, Preconception, Genetic counseling, Genetic diseases, Newborn

Abstract 19

A cross-sectional study on harmful child-rearing practices followed by mothers and grandmothers in the rural field practice area of a medical college in Chitradurga

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Background: Child-rearing practices are influenced by various traditions, rituals, and beliefs in the Indian community. While some practices are innocuous, others pose a serious threat to child health, such as neonatal tetanus (due to umbilical cord application of clay, talcum, oil, and ghee), allergies/asthma (due to sambrani smoke exposure), lipoid pneumonia (due to oil instillation into nose/mouth during an oil bath), conjunctivitis (due to kajal application to eyes), sepsis due to branding during childhood illnesses. Although India has seen a significant reduction in IMR, U5MR, and NMR since the year 2014, SRS 2020 report shows that there is still a long way to go to achieve sustainable development goals (SDGs) targets by 2030. There is a paucity of data on harmful child-rearing practices in this central region of Karnataka. The present study was conducted to estimate the prevalence of harmful child-rearing practices and their associated risk factors at Yalagodu, a rural field practice area of Basaveshwara Medical College & Hospital, among mothers and grandmothers of children aged ≤2 years.

Material and methods: This cross-sectional study was conducted from June to August 2022 after obtaining IEC approval. The participants consisted of mothers or grandmothers of children aged one day to 2 years in the study area. After obtaining their informed consent, data on child rearing practices were collected by interview method using a semi-structured questionnaire. The data collected were compiled in MS Excel and analyzed using SPSS v. 16.0.

Results and discussion: A total of 300 people were included in the study, consisting of 218 mothers (72.7%) and 82 grandmothers (27.3%). Harmful practices such as cow dung/ash three or turmeric application to the umbilical cord were practiced by 13% of respondents. They also informed that they discarded colostrum (14.6%), gave prelacteal (67%), instilled oil into ears and nose (51%), provided lobana fumes for inhalation (54%), branding by using hot bangles to ward off fever, cold (40.3%), applied kajal to the eyes (39%) for their children/grandchildren. These practices were predominantly higher among grandmothers and illiterates compared to mothers and literates, respectively. These harmful practices showed a declining trend with a higher educational status of mothers. However, it is distressing to note there is still a high percentage of well-educated mothers who follow many of these practices. These could be due to the existing traditions, rituals, and the primary decision-making powers being with the grandmothers and elders with little autonomy over newborn care with the mothers.

Conclusion: The study found that harmful child-rearing practices are continued in the rural community. And also, these practices are done by educated mothers. The compelling influence of other family members, especially grandmothers, has to be addressed by extensive health communication activities and the practice of inclusive family-centered education programs during antenatal and postnatal periods.

Keywords: Prelacteal feeds; Kajal application; Oil instillation into the nose; Umbilical cord care

Abstract 20

Gaining knowledge from acute leukemia autopsies: A comparative analysis of ante-mortem and post-mortem clinico-pathological features in the 21st century

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Introduction: Despite notable progress in diagnosing and treating acute myeloid/lymphoblastic leukemia (AML/ALL), many patients still succumb to it. This underscores the need for a deeper understanding of AML/ALL, where autopsies can offer valuable insights. This study aims to explore autopsy findings in AML/ALL cases, their correlation with ante-mortem clinical and hematopathological data, and assess clinico-pathological discrepancies.

Material and methods: Over 14 years (2009–2022), we examined 46 autopsied AML/ALL cases (age > 12 years), including detailed clinical and hematopathological evaluations, along with thorough gross and microscopic autopsy examinations. Clinico-pathological differences were carefully documented.

Results and discussion: Among AML/ALL subtypes, B-ALL (34.8%) was most common, followed by AML-NonM3 (32.6%), acute promyelocytic leukemia (23.9%), and T-ALL (8.7%). Organ infiltration correlated with higher total leukocyte counts (TLCs). Remarkably, therapy-naïve patients (30.4%) displayed active leukemia in various organs compared to chemotherapy-treated patients. MRD-negative cases (15.2%) exhibited no disease in extramedullary sites, while MRD-positive cases (13%) showed varying degrees of active disease. Autopsies uncovered infections in 23 cases, mainly fungal (34.8%), followed by bacterial (13.0%), and viral (6.5%). Major discrepancies, particularly infections, hemorrhages, and infiltration/leukemia, were found in 47.8% of cases, with minor discrepancies in 37%, while 15.2% had none. The most common cause of death was malignant infiltration (67.4%), followed by infections (37%), and intracranial hemorrhages (21.7%).

Conclusion: This study re-examined autopsy findings in 21st-century acute leukemia cases, illuminated leukemia dynamics in

extramedullary tissues, and enhanced our understanding of the disease itself and the adverse effects of therapeutic interventions missed before a patient's demise.

Keywords: Acute leukemia, Autopsy, Discrepancy, Histopathology

Abstract 21

Prevalence of non-alcoholic fatty liver disease in patients with hypothyroidism presenting at a tertiary care teaching hospital in Chitradurga

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Background: Non-alcoholic fatty liver disease (NAFLD) represents a broad clinical spectrum ranging from simple fatty liver to non-alcoholic steatohepatitis (NASH), which may progress to liver fibrosis, cirrhosis, and hepatocellular carcinoma. Endocrine hormones have a significant impact on metabolic abnormalities. The thyroid gland is involved in energy homeostasis, lipid and carbohydrate metabolism, regulation of body weight, and adipogenesis. There has been a renewed interest in understanding the association between NAFLD/NASH and thyroid dysfunction in recent days. Subclinical hypothyroidism is associated with metabolic syndrome, cardiovascular mortality, and disturbance of lipid metabolism. The present study was conducted to understand the association between NAFLD/NASH and hypothyroidism.

Material and methods: The cross-sectional study was conducted at Basaveshwara Medical College Hospital among 100 adult non-obese hypothyroid patients. Anthropometric measurements were performed. A thyroid profile was done on an overnight fasting sample. Euthyroidism was defined as TSH level between 0.4 and 4.0 μIU/L with normal FT4 levels. Subclinical hypothyroidism was defined as serum TSH 24.1 μIU/L with normal FT4, overt hypothyroidism was defined as serum TSH 24.1 μIU/L and FT4 < 0.7 ng/dL. NAFLD was diagnosed if there was the presence of fatty liver by ultrasonography, in the absence of excess alcohol intake (> 20 g/day), medications known to cause fatty liver, seropositivity of hepatitis B surface antigen, and antibody to hepatitis C virus. NAFLD was three graded based on the degree of hepatic echogenicity, periportal echogenicity, and presence or absence of obscuration of the diaphragm.

Results and discussion: Prevalence of overt hypothyroidism and subclinical hypothyroidism and NAFLD were 54%, 46%, and 70%, respectively. 100% of 'overt hypothyroidism' patients had NAFLD. Grades of NAFLD increased steadily with increasing mean values of TSH and decreasing mean values of FT4. This association was statistically significant. Average levels of TSH were significantly higher among patients with NAFLD (6.7909 ± 1.16 μIU/L) compared to those without NAFLD, and significantly lower levels of FT4 were found to be associated with the presence of NAFLD (0.594 ± 0.202 ng/dl) compared to that among patients without NAFLD. A significantly higher proportion of severe grade III NAFLD was associated with overt hypothyroidism (92.9%)

Conclusion: Subclinical and overt hypothyroidism patients are at a higher risk for development of NAFLD. A rise in TSH levels is found to be associated with an increased risk of development of NAFLD. As hypothyroidism is known to be associated with obesity and metabolic syndrome, NAFLD/NASH is also a hepatic feature of metabolic syndrome and insulin resistance, thus, the present study suggests that the management of obesity and hypothyroidism plays a pivotal role in preventing the development fatty liver disease and its further progression.

Keywords: Non-alcoholic fatty liver disease, Subclinical hypothyroidism, Overt hypothyroidism, Thyroid stimulating hormone, FT4

Abstract 22

Association of insulin resistance and polycystic ovarian syndrome: A cross-sectional study at a tertiary hospital in Central Karnataka

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Introduction: Non-alcoholic fatty liver disease (NAFLD) represents a broad clinical spectrum ranging from simple fatty liver to non-alcoholic steatohepatitis (NASH), which may progress to liver fibrosis, cirrhosis, and hepatocellular carcinoma. Endocrine hormones have a significant impact on metabolic abnormalities. The thyroid gland is involved in energy homeostasis, lipid and carbohydrate metabolism, regulation of body weight, and adipogenesis. There has been a renewed interest in understanding the association between NAFLD/NASH and thyroid dysfunction in recent days. Subclinical hypothyroidism is associated with metabolic syndrome, cardiovascular mortality, and disturbance of lipid metabolism. The present study was conducted to understand the association between NAFLD/NASH and hypothyroidism.

Material and methods: The cross-sectional study was conducted from July 1, 2022, to July 31, 2023, among females aged between 18 and 40 years who were diagnosed with cases of polycystic ovarian syndrome, attending Gynaecology OPD, Department of OBG, Basaveshwara Medical College & Hospital. Exclusion criteria consisted of pregnant females, women above 40 years of age, those who had menorrhagia, who were presently on medications such as steroids or oral contraceptives, patients with serious systemic illness, and those who refused to give informed consent for participating in the study. Diagnosis of polycystic ovaries was as per the modified Rotterdam criteria in which PCOS may be diagnosed if any two of the following are present: (1) clinical or biochemical hyperandrogenism, (2) evidence of oligo-anovulation, (3) polycystic appearing-ovarian morphology on ultrasound, with the exclusion of other relevant disorders. Diagnosis of polycystic ovaries was confirmed by pelvic ultrasonography as per Rotterdam 2003 criteria for PCOS: Presence of 2 out of 3 criteria: oligo and/or anovulation, features of hyperandrogenism (clinical and/or biochemical) with exclusion of any other etiologies of androgen excess, polycystic ovaries-transvaginal ultrasonography showing 12 or more follicles of 2–9 mm diameter in or both ovaries and/or increased volume > (10 cm^3) is ultrasound feature of PCO. Information regarding socio-demographic profile clinical history was noted down in a preformed semi-structured study proforma. A detailed clinical examination was conducted. Measurements of the participant's height, weight, waist circumference, and blood pressure were noted. About 2 mL of blood was collected in the plain tube after two h of food which was centrifuged and serum was separated. Serum was used for the estimation of biochemical

parameters using the Johnson and Johnson Vitros 250 dry chemistry auto-analyzer. Estimation of serum insulin was done by using an automated Chemiluminescence Immunoassay system. Endocrinological parameters like serum testosterone, TSH, and prolactin were measured on days 2–3 of the menstrual cycle were estimated. An oral glucose tolerance test was performed. Venous blood samples were taken at fasting and two h after 75 g glucose load for glucose measurement. Normal glucose tolerance, impaired glucose tolerance (IGT), and type 2 diabetes were defined using glucose levels during the OGTT, according to the WHO criteria: Normal OGTT: FPG < 140 mg/dL; IGT: FPG: 110–126 mg/mL and 2 h plasma glucose: 140–200 mg/mL; diabetes: FPG > 126 mg/dL and 2 h plasma glucose: > 200 mg/dL. Estimation of insulin resistance (IR) was calculated using HOMA MODEL (Homeostatic Model Assessment): Formula: IR = (Fasting plasma glucose in mg/dL × Fasting serum 4 insulin in μIU/ml) ÷ 405. The patient was considered to have insulin resistance if the HOMA1-IR value was more than 2.7.

Results: A total of 50 PCOS-diagnosed cases who fulfilled the study criteria participated in the study. 42% of cases were in the age group of 18–25 years. The majority of patients (36%) had a BMI of 25–29.9, and 30% had a BMI of 30–39. 12% of participants had IGT, and 4% had diabetes mellitus. IR was found among 38% of participants. Higher BMI levels were found to be significantly associated with both impaired glucose tolerance and insulin resistance. Greater waist–hip ratio was found to be significantly associated with dyslipidemia.

Conclusion: The present study highlights the importance of elaborate evaluation of glycemic, endocrine, and other metabolic parameters along with measurement of IR in patients with PCOS. Study findings emphasize the need to focus on the potential long-term consequences, such as diabetes and cardiovascular diseases in PCOS patients.

Keywords: Insulin resistance, PCOS, Metabolic syndrome, Body mass index

Abstract 23

Hospital-based multi-centric diabetes registry from India

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Background: It is estimated that in India, 101 million people are suffering from type 2 diabetes, and nearly 136 million have pre-diabetes. The goal of the registry was to create a database of individuals with diabetes mellitus that may be utilized to provide information on how the condition is monitored and managed across various regions within India. This was also done to create a dataset of patients for future clinical trials.

Material and methods: The study was a hospital-based cross-sectional observational study. Data for this registry were collected at seven centers identified by the Biotechnology Industry Research Assistance Council across India. The collaborating sites included both private and public sectors, with participants from urban and rural areas. The patients with type 2 diabetes mellitus visiting the OPD of the hospitals of all the collaborating sites were assessed for eligibility and consecutively invited to enroll in the registry after obtaining their informed consent. Data were collected on a printed data collection form. Demographic details, medical history, physical examination, personal history, complications of diabetes, if any, laboratory investigations, and treatment history of the subject were captured. Data collected were entered into the electronic database with the help of Indian CST software. Each site was provided with a unique user ID and password to login online and complete the data entry through a web-based data entry platform.

Results: A total of 14,997 patients were registered over a period of 2 years. Demographic, socioeconomic, risk factors, comorbidities, and medical management were evaluated in the patients enrolled. Among the participants recruited, 51.4% were males and 48.6% were females. 57% of patients were from urban areas, and 43.1% were from rural areas. The average HbA1C of the patient was 8.6% ± 2.06. The most common micro-vascular complications identified among participants enrolled were retinopathy (7.8%), followed by neuropathy (6.5%) and nephropathy (2.1%). The macro-vascular complications identified were ischemic heart disease (1.8%), stroke (1.4%), and peripheral arterial disease (0.2%). The commonest comorbidities were hypertension (46.7%) and dyslipidemia (20.5%). This diabetes registry has both public and private sector data and the representation of both urban and rural populations. This gives us an idea about the management pattern and complication status of patients with diabetes in India. Among the total participants enrolled, 63.2% were employed and 36.8% were unemployed. About 45% of participants considered diabetes as a burden to their family.

Conclusion: This diabetes registry has given insight into the multifarious structure of diabetes mellitus, which can be used by healthcare planners, researchers, and government officials in developing primary and secondary intervention strategies. This also helps in devising the best management strategies for these patients.

Keywords: Diabetes mellitus, Diabetology, Registry, Microvascular disease, Macrovascular disease

Abstract 24

Factors affecting the utilization of Employees State Insurance Scheme benefits in a tertiary care hospital in Central Karnataka

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Background: The Employees' State Insurance (ESI) scheme is an evolutionary security scheme in India that covers a huge working population. It provides social protection to workers in the organized sector and their dependents in contingencies, such as sickness, maternity, disablement, and death due to an employment injury or occupational disease. This study focuses on the awareness and utilization of the ESI scheme by the employees.

Objective: To study the utilization of ESI scheme benefits in a tertiary care hospital in Central Karnataka.

Methodology: All employees registered under the ESI scheme of the tertiary care hospital, i.e., 398, were included in the study, out of which 19 were unwilling or unavailable to participate in the study. Thus, 379 covered under ESI insurance in Basaveshwara hospital were included in the study. The data on sociodemographic variables and informa-

tion on awareness and utilization of ESI services were taken. Data were entered into a Microsoft Excel sheet and analyzed using SPSS 17.0 software. Frequency and percentages were calculated.

Results: In this study, only 3.9% of the participants utilized health services in ESI hospitals. The most common reason (56%) for non-utilization of ESI services was that the OPD timings were unsuitable. Around 32.2% had absolutely no knowledge about ESI services, and 59.2% of the participants were dissatisfied due to a deficit of medicines in the facility. Around 95% of the study subjects were happy about getting the lab services and any surgical procedures free of cost.

Conclusion: Most of the working employees have low awareness about the existing ESI scheme. Hence, both the organization and government should focus on creating awareness among the employees and the benefits of utilization of ESI policy.

Keywords: Employees' State Insurance, Utilization, Healthcare services

Abstract 25

Receptor for advanced glycation end products (RAGE) (–429T/C and 1704G/T) polymorphism and gene expression in type 2 diabetes patients with nephropathy

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Background: The global burden of diabetic nephropathy is rising and eventually leads to chronic kidney disease. Besides various factors, genetic polymorphism of RAGE is associated with nephropathy in type 2 diabetes mellitus (T2DM) patients and progress toward renal failure. The available data are limited to RAGE polymorphism in T2DM with nephropathy in India.

Objectives: Hence, the study was designed to evaluate the role of -429T/C and -1704G/T RAGE polymorphisms and their expression among T2DM patients with nephropathy and healthy control in western Rajasthan.

Material and methods: The case–control study included 96 T2DM patients with nephropathy (stages I, II, and III) and 100 healthy controls. The study duration was from 2021 to 2023. The sample size was calculated based on the prevalence of diabetic nephropathy. The TaqMan single nucleotide polymorphism genotyping assays were performed using real-time PCR to assess the genotype frequencies. The circulating levels of RAGE, AGE, soluble RAGE, and interleukins-6 (IL-6) were estimated using enzyme-linked immunosorbent assay. RAGE expression in peripheral blood mononuclear cells was determined by quantitative real-time PCR.

Results and discussion: The mutant allele (CC) of -429T/C RAGE (rs 1800625) was significantly associated with nephropathy in diabetes (OR = 9.5, CI: 1.2–77.8, $p = 0.03$). The dominant model (TT Vs TC + CC) also showed a significant association (OR: 4.6, CI: -2.2–9.9, $p = 0.03$) with nephropathy risk in patients with T2DM. The RAGE of rs1184003 polymorphism did not show any association in the allele and genotypic frequencies in diabetes. Further haplotype analysis also showed the association of locus with nephropathy (global halotype association $p = < 0.001$) in diabetic patients. The RAGE expression was significantly higher in diabetic patients with nephropathy compared to control.

Conclusion: The -429T/C RAGE polymorphism is significantly associated with of nephropathy in T2DM patients. The mutant allele confers susceptibility to nephropathy among T2DM patients.

Keywords: RAGE, Diabetic nephropathy, Polymorphism, ELISA, PCR

Abstract 26

Unfavorable outcome of tubercular (TB) cervical lymphadenitis: A study of possible predictive factors

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Objective: Tubercular (TB) lymphadenitis (often cervical) is the most common type of extrapulmonary tuberculosis (EPTB) encountered worldwide, accounting for 25%–30% of the total burden of EPTB. It often responds to anti-TB treatment but sometimes has unfavorable outcomes. The present research was undertaken to study various such outcomes and their possible predictive factors.

Methods: The study was conducted over one year (Oct 21–22) at KGMU, Lucknow, India. One hundred fifty newly diagnosed patients using histopathological and microbiological methods (63 males and 87 females) of drug-sensitive TB cervical lymphadenitis were followed up for six months after starting anti-TB treatment (ATT). Diabetes, HIV, pregnant, and lactating females formed the exclusion criteria. Paradoxical reactions that occurred during the initial quarter of ATT were also excluded.

Type of study: Observational cohort study.

Sample: 150 using open epi

Results: 57 (38%) cases out of 150 were found to have unfavorable outcomes, which included non-resolving lymph nodes in 36 (63%) cases, existing nodes enlarged in 9 (16%) cases, nodes developed at new sites in 7 (12%) cases, whereas 5 (9%) patients experienced sinus tract formation. Predictive factors were overlapping and included adverse outcomes in patients who had bigger nodes, patients with multiple nodes, and with bilateral involvement. Comorbidity, including liver and kidney etc, treatment compliance, intolerance to ATT, and development of resistance were other predictive factors. Incidentally, more number of males (57%) developed unfavorable outcomes as compared to females. The association was also seen between socioeconomic status, with the lower class being the worst affected, with 35 (61%)cases.

Conclusion: Although the fate of lymphadenitis is mostly unknown after starting ATT, patients should undergo a thorough evaluation, and comorbidities and compliance issues should be properly addressed. Ruling out resistance is a must. Patients with unfavorable outcomes should receive extended ATT or not remains a debatable issue. Paradoxical reactions should be excluded and treated before arriving at conclusions.

Keywords: Extrapulmonary impact, Monitoring, Treatments

Abstract 27

Study of the role of maternal serum matrix metalloproteinases and polymorphisms in the prediction of preeclampsia at a tertiary care center

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Background: Normal pregnancy is associated with marked hemodynamic changes that allow adequate uteroplacental blood flow for the growing fetus. Matrix metalloproteinases (MMPs) are important regulators of vascular and uterine remodeling. MMP-9 and MMP-13 are directly linked to the process of blood vessel remodeling. In this study, we aimed to evaluate the role of the circulating MMP-9 and MMP-13 levels in the prediction of preeclampsia and to evaluate different genotypes for the MMP-9 and MMP-13 polymorphisms.

Material and methods: An observational cohort study on a pilot basis was done on 90 subjects at the Department of Obstetrics and Gynecology with the Department of CFAR KGMU, Lucknow, including pregnant women attending ANC OPD in the first trimester. Patients with known cases of chronic hypertension and multiple gestation were excluded. Samples for MMP-9 and MMP-13 were analyzed. All women were followed till delivery. Levels of MMP-9 and MMP-13 were compared in pre-eclamptic and normotensive women.

Results and discussion: 90 ante-natal women were recruited after consent at 11–14 weeks of pregnancy. MMP levels were done by ELISA testing, and gene polymorphism was assessed by PCR. 13 women (14.4 %) women developed preeclampsia. Mean MMP-9 was found to be significantly lower in pre-eclamptic women (15.04) vs normotensive women (22.36). MMP-13 was found to be higher in pre-eclamptic women (1213) vs normotensive women (1130); however, values were not statistically significant.

Conclusion: Levels of MMP-9 were found to be significantly lower in pre-eclamptic women. The allelic distribution of MMP-9 and MMP-13 was comparable in both groups. Our study suggests the possible role of MMPs in the prediction of preeclampsia. Probably larger studies, including other metalloproteinases and larger sample sizes may be planned in the future.

Keywords: Matrix metalloproteinases, Preeclampsia

Abstract 28

Systemic and ocular pressure changes following sympathetic activation in yoga practitioners: A comparative study

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Background: Blood pressure (BP), intraocular pressure (IOP), and ocular perfusion pressure (OPP) are important risk factors for the development of glaucoma. Under conditions of stress, either physical or psychological origin, there is a disturbance of autonomic regulation. This causes increased activation of the sympathetic nervous system, which might influence BP and ocular pressures. An altered autonomic balance towards lower sympathetic drive is observed in subjects practicing yoga, but it is not clear whether this adaptation also influences ocular pressures.

Objective: To compare and analyze the BP, IOP, and OPP changes following sympathetic activation in yogic practitioners and non-practitioners of yoga.

Methods: 110 subjects in the age group of 18–25 years were recruited and categorized into yoga and non-yoga groups. Basal IOP and BP were recorded using a rebound tonometer and sphygmomanometer, respectively. Isometric hand grip and cold pressor tests were administered one at a time. IOP and BP were recorded immediately following these sympathetic activation tests. Mean arterial pressure and OPP were calculated using the standard formula.

Results: Significant increases in the values of pulse, BP, IOP, and OPP following sympathetic activation were observed in the non-yoga group, which was not noted in the yoga group. Elevation in systemic and ocular pressures following sympathetic activation was less in yoga practitioners. This adrenergic response was greater in the non-yoga group.

Conclusion: Regular yoga practice maintains adequate perfusion of ocular tissues by autoregulation. Hence, yoga can be recommended as a complementary health approach for the autonomic nervous system imbalance.

Keywords: Blood pressure, Intraocular pressure, Ocular perfusion pressure, Isometric hand grip, Cold pressor test

Abstract 29

Assessment of soluble PDL1 and its correlation with T regulatory cells and inflammatory markers IL-6 and hsCRP in preeclampsia: An insight into the pathogenesis of the disease

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Introduction: Studies have shown that aberrant reactions of the immune systems play an important role in the pathogenesis of preeclampsia. The programmed cell death protein 1/programmed death-ligand 1 (PD-1/PD-L1) system, which is the immune checkpoint molecules, and the T-regulatory cells (Tregs) system are decisive in the regulation of immune responses and can be the target molecules. Inflammatory cytokine like IL-6 plays a critical role in modulating the population of Tregs. In this study, an attempt has been made to evaluate the soluble PDL1 (sPDL1) in the serum of preeclampsia cases and correlate it with Tregs and inflammatory cytokine Il-6 to have an insight into the link between these immunomodulatory molecules in the pathogenesis of preeclampsia.

Material and methods: 20 preeclampsia cases and 20 trimester-matched normal pregnancy cases were enrolled for the study. Serum sPDL1 and IL-6 were measured by ELISA. hsCRP was estimated in

Clinical Biochemistry Auto Analyzer. Tregs were evaluated by Flow Cytometry. All data were serialized and anonymized upon entry in MS Excel. Appropriate statistical analysis was done. A *p*-value of less than 0.05 was considered statistically significant. All analysis was done using IBM SPSS v26.0 and JASP v 0.17.2

Results and discussion: sPDL1 was found to be raised in preeclampsia cases compared to normal pregnancy, whereas Tregs were decreased in preeclampsia compared to normal pregnancy. The inflammatory cytokine IL-6 and inflammatory marker hsCRP were observed to be raised in preeclampsia compared to normal pregnant cases. sPDL1 was inversely correlated with Tregs and positively correlated with inflammatory markers like IL-6 and hsCRP with $p < 0.05$.

The immune checkpoint molecule PDL1 is inversely correlated with Tregs in preeclampsia cases. Tregs has been depicted to be creating a protective environment for the growing fetus. Associated inflammation was seen by raised IL-6 and hsCRP. Preeclampsia is characterized by a transition towards a continuous inflammatory response and also endothelial impairment. PDL1 can be the link between this immunological imbalance.

Conclusion: Inverse correlation between sPDL1 and Tregs with raised IL-6 and hsCRP levels in preeclampsia have a potential implication for early diagnosis and management of the condition. PDL1 can be a target molecule for early management of preeclampsia.

Keywords: Preeclampsia, PDL1, Tregs, IL-6, Inflammation

Abstract 30

Role of artificial intelligence powered continuous contactless remote patient monitoring systems in the management of patients in non-ICU settings: Our experience

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Introduction: Continuous monitoring is the most vital aspect in the management of patients in non-ICU settings. Contactless continuous remote monitoring systems have revolutionized the management of vulnerable patients which alerts the doctors to identify the critical events and intervene timely. In this study, we present our experience of using cloud-connected continuous remote monitoring systems at Ramaiah Memorial Hospital, Bangalore.

Objectives: To study the efficacy and impact of continuous contactless monitoring systems in the management of patients in a non-ICU setting.

Material and methods: A retrospective hospital-based study was conducted in Ramaiah Memorial Hospital, Bangalore, for a period of 6 months (January 2023–July 2023). Patients admitted to wards were connected to a cloud-based continuous and contactless remote monitoring system for automatic collection and documentation of vital signs. The monitors used artificial intelligence-powered ballistocardiographs to capture the vibrations from the human body and translate them into insightful vital biomarkers. The monitors recorded heart rate, blood pressure, respiratory rate, temperature, and oxygen saturation. We studied and analyzed the number of critical events identified by the monitors, code blue rates, and reduction in nursing hours.

Results: A total of 1015 patients in the wards were connected to a continuous remote monitoring system. The majority of our patients were acute febrile illness 610 (60%), elective surgeries 220 (21.6%), COPD, bronchial asthma 102 (10%), anemia 45 (4.4%), and others 38 (3.4%). Sixty critical events were identified and alerted by the monitors, and these patients were shifted to the ICU for further management. The critical events were hypotension and tachycardia in 25 patients, desaturation in 30, and arrythmias in 5 patients. There was one code blue event in the above-mentioned sample. There was a significant reduction in medical expenses for the patients as they were monitored thoroughly in the wards, and there was no need to shift to ICUs. In the past six months, a total of 4719 nursing hours were saved.

Conclusion: Contactless continuous remote monitoring systems were effective methods of monitoring ward patients. They helped to identify critical and life-threatening events, and timely escalation of these patients was done. Continuous monitoring reduced the number of code blue events in the wards and improved the clinical outcome.

Abstract 31

Study to correlate between RDW and markers of inflammation and blood pressure in a tertiary care center in Chennai

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In the growing era of modernization and globalization, non-communicable diseases have become a pandemic issue. There has been an increase in the prevalence of hypertension due to aging and faulty dietary habits. It has been studied that hypertension is an inflammatory state. Red cell distribution width is a recently found marker of inflammation.

Hence aim of the study is:

- To assess the correlation between blood pressure and RDW.
- To assess the association between values of CRP and RDW in hypertensive, pre-hypertensive, and normotensive.

This is a cross-sectional study which included 120 individuals, who were subdivided into three groups: normotensive, 40; pre-hypertensive, 40; hypertensive subjects were divided into two groups, namely recently diagnosed hypertensive and hypertensive on antihypertensive medication for two years or less than two years. RDW shows a significant association with CRP but no relationship between RDW and blood pressure could be established.

Abstract 32

The relationship between patient satisfaction and waiting times: A meta-analysis?

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Background: Long waiting times are a common problem in health care, and they can have a significant negative impact on patient satisfaction. Conversely, low patient satisfaction can lead to decreased trust in the healthcare system, increased patient complaints, and even legal action. The purpose of this meta-analysis was to synthesize the findings of previous studies on the relationship between patient satisfaction and waiting times.

Methods: PubMed, Embase, and CINAHL databases were used for the analysis. The search terms used were "waiting time," "patient satisfaction," and "healthcare." The search was limited to studies published in English between 2010 and 2023. The quality of the included studies was assessed using the QUADAS-2 and PRISM tools, and 25 papers were finalized for the meta-analysis.

Results: This meta-analysis synthesizes the findings of previous studies on the relationship between patient satisfaction and waiting times. The meta-analysis included 25 papers that met the inclusion criteria and a total of 62,400 patients. The meta-analysis found that a longer waiting time was associated with lower patient satisfaction (SMD = –0.50, 95% CI: –0.63, –0.37). This means that for every 1-unit increase in waiting time, patient satisfaction decreased by 0.50 units on a 5-point Likert scale. The results of the meta-analysis were consistent across the 25 included studies, suggesting that the findings are generalizable to other healthcare settings.

Conclusion: The meta-analysis also identified a number of factors that may moderate the association between waiting times and patient satisfaction, such as the patient's perceived control over the waiting time, the patient's expectations of waiting time, and the patient's overall satisfaction with the healthcare system.

Keywords: Patient waiting times, Mean satisfaction scores

Abstract 33

Amitriptyline intoxication: Unanticipated complications

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Introduction: Amitriptyline is one of the tricyclic antidepressants (TCAs) which are frequently recommended to individuals with depression. However, these medications can also be abused, which can result in coma, deadly refractory ventricular arrhythmia, and a number of other issues. The prevalence of patients suffering from overdose intoxication is anticipated to rise as a result of the easy availability to TCAs. We recently saw a patient who had unusual but fatal side effects from amitriptyline overdose.

Material and methods: A 41-year-old male with no past medical history presented with an alleged history of consumption of multiple TCA overdoses, approximately 1500 mg. On examination, his vitals were GCS score: E1 V1 M1; heart rate: 121 beats per minute; blood pressure: 150/100 mm Hg; other vital parameters are within normal limits. The patient was drowsy, with both pupils 3 mm sluggish and reactive to light. The patient was intubated in view of low GCS and anticipated risk of aspiration. The patient was admitted to MICU.

Results and discussion: His urine for the drug abuse panel showed positive for TCAs. His blood reports showed hypernatremia and hypokalemia, and other blood parameters were within normal limits. The patient developed an episode of supraventricular tachycardia followed by cardiac arrest, s/p ROSC. In view of significant toxicity, intravenous lipid emulsion was given, and plasmapheresis was done. Sodium bicarbonate bolus was given to prevent ventricular arrhythmias and to maintain alkaline PH. The patient developed involuntary jerky movements of the body—suggestive of myoclonus for which an electroencephalogram was done, and it showed diffuse brain dysfunction not specific to any etiology. Emergency CT brain was done in view of dilated and non-reactive pupils and absent brainstem reflexes, which showed diffuse cerebral edema started on anti-edema measures, and an MRI brain did not show any specific etiology of sudden onset cerebral edema, which confirmed amitriptyline overdose as the cause of cerebral edema.

Conclusion: Despite intravenous lipid emulsion and plasmapheresis, the common TCA, amitriptyline, has the potential to lead to serious side effects like abdominal compartment syndrome with intestinal obstruction, irreversible central nervous system damage, and deadly arrhythmia. Physicians need to be aware of these potentially fatal side effects of amitriptyline overdose.

Keywords: Amitriptyline, Supraventricular tachycardia, Lipid emulsion, Plasmapheresis, Diffuse brain dysfunction

Abstract 34

Cutaneous reactions to DPP-4 inhibitors: A case series

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Introduction: Type 2 diabetes mellitus (T2DM) is a persistent metabolic issue characterized by insulin resistance and insufficient insulin production. DPP-4 inhibitors, known as gliptins, are oral medications that improve blood sugar control by blocking the breakdown of incretin hormones like glucagon-like peptide-1 and glucose-dependent insulinotropic polypeptide. This leads to better glucose regulation without a significant risk of low blood sugar. While generally well-tolerated, recent clinical findings highlight various skin reactions, and these reactions encompass various presentations like urticaria, angioedema, bullous pemphigoid, and other skin eruptions, often manifesting as itching, redness, rashes, or blisters.

Material and methods: Through routine pharmacovigilance, five patients who encountered cutaneous reactions to gliptins were discerned. Thorough information was gathered from hospital records, observations, and interviews. Subsequently, this dataset underwent analysis to evaluate the causality and severity of the adverse drug reactions. Additionally, a review of the literature was conducted to identify any specific causes and potential preventive measures based on patient profiles.

Results and discussion: Out of the five patients with cutaneous reactions, two developed bullous pemphigoid; one had urticaria, another had acute generalized exanthematous pustulosis, and the last one had prurigo simplex. Three of these patients had comorbidities, including chronic kidney disease and hypertension, with three requiring intensive care unit treatment. Causality assessment, using

the WHO-UMC scale, indicated that three cases were probable, while prurigo simplex and urticaria were considered possible. DPP-4 inhibitors may inhibit collagen XVII cleavage by plasmin, disrupting immuno tolerance and generating autoantibodies against collagen. Increased proinflammatory chemokine activity, like CCL11/exotoxin, could lead to blisters and impede keratinocyte movement, delaying wound healing. All patients recovered after discontinuing the drug and receiving symptomatic treatment.

Conclusion: As DPP-4 inhibitors gain traction in T2DM treatment, healthcare providers must recognize potential skin reactions. Keeping informed of this evolving therapy facet aids clinicians in balanced treatment decisions, optimizing glycemic control alongside skin considerations for better patient care. More research is vital to uncover reaction mechanisms and develop optimal management approaches including pharmacogenetic studies to reveal genetic impact on drug response and glycemic control.

Keywords: Type 2 diabetes mellitus, DPP-4 inhibitors, Incretin, Cutaneous reactions

Abstract 35

A rare presentation of Tay-Sachs disease and Danon disease

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Introduction: Lysosomal storage disorders are heritable, occurring due to genetic defects in one or more specific lysosomal enzymes, activator proteins, or membrane proteins, resulting in deficient enzyme activity. Tay-Sachs disease is an autosomal recessive lysosomal storage disorder characterized by progressive neurodegeneration with an overall prevalence of 1 in 200,000 live births in the general population.

Danon disease is a rare X-linked dominant lysosomal glycogen storage disease characterized by a classic triad of cardiomyopathy, skeletal myopathy, and intellectual disability. Danon and Tay-Sachs disease are two rare lysosomal storage disorders. The coexistence of two lysosomal storage disorders in an individual is very rare. Hence, we present this case.

Material and methods: A 21-year-old male presented to our tertiary care hospital with complaints of difficulty in swallowing with his neck in an extended position for eight years. With a significant past history of vertebral tuberculosis with uneventful recovery after ATT in 2014. However, neck muscle weakness did not improve. In 2018, he was diagnosed with hypertrophic cardiomyopathy based on the echo findings with a significant family history of sudden cardiac death. On clinical examination, his vital parameters were normal, and higher mental functions were normal; however, there was weakness of neck muscles and sternocleidomastoid muscle with no significant involvement of the cranio-sensory-motor system and no spine deformities noted. On cardiovascular examination, the apical impulse was noted in the 4th intercostal space, medial to left mid-clavicular line, S1 S2 was heard normally, and no murmurs were heard. Respiratory and gastrointestinal system examinations were unremarkable.

Results: Investigations revealed deranged liver function tests, elevated creatinine phosphokinase levels, and anti-nuclear antibody was 1+ positive. 2D ECHO and cardiac MRI was suggestive of hypertrophic cardiomyopathy. The fundoscopy was normal. In view of skeletal muscle weakness, cardiomyopathy, and subnormal intelligence in a young individual, a strong suspicion of lysosomal storage disorder was made, and samples were sent for whole exome sequence analysis, which revealed LAMP2 gene and HEXA gene mutation confirming the diagnosis of Danons and Tay-Sach diseases respectively.

Conclusion: Here, we presented a young male patient with complaints of difficulty in swallowing with the neck in an extended position and was diagnosed with Danon and Tay-Sachs disease by exome sequencing method. This case necessitates the importance of having a strong clinical suspicion for lysosomal storage disorders as one of the differential diagnoses. Pre-natal screening and screening for lysosomal storage disorders in the family members of confirmed cases is important in order to ensure early genetic counseling and intervention so as to improve the lifestyle of these patients and decrease the mortality and morbidity.

Keywords: Danon disease, Tay-Sachs disease, Lysosomal storage disorders

Abstract 36

Sero negative autoimmune hepatitis

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Introduction: Autoimmune hepatitis (AIH) is a chronic disorder characterized by continuing hepatocellular necrosis and inflammation, usually with fibrosis, which can progress to cirrhosis and liver failure. When untreated, it may have a 6-month mortality of as high as 40%. Patients of all ages and races, with female predominance.

Material: A case of a 42-year-old female presented with complaints of bilateral lower limb swelling, jaundice, facial puffiness, easy fatiguability, and multiple ecchymotic rashes over forearms and chest with a recent onset diabetes mellitus. On examination, she had bilateral pitting edema, icterus, periorbital edema, and cyanosis. Systemic examination was within normal limits. Biochemical investigations showed deranged LFT with hypoalbuminemia. Serology was negative. Ascitic fluid analysis showed high SAAG and low protein. Opthal evaluation showed?KF ring, serum ceruloplasim level, and 24-h urinary copper were within normal limits. Upper GI endoscopy showed early esophageal varices and mild PHG. AIH panel was negative. The patient was subjected to transjugular liver biopsy showed features compatible with AIH. Blood and urine cultures showed no growth, and chest X-ray was normal. The patient was treated with steroids and immunomodulators.

Discussion: AIH itself is a rare entity, whereas sero-negative AIH constitutes 20% of cases; based on the natural history of AIH, the 10-year survival is 80%–98% for treated cases. Proper evaluation and diagnosis of AIH is important, especially in cases of sero negative, since instances of reversal of fibrosis and cirrhosis have been reported in patients responding to treatment.

Conclusion: A high degree of clinical suspicious is required to diagnose sero negative AIH due to its rarity and non-specific presentation. Early diagnosis is paramount in management to prevent morbidity and mortality.

Abstract 37

An interesting case of pyrexia of unknown origin

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Introduction: Adult-onset Still disease (AOSD) is an uncommon clinical entity that predominantly affects predominantly females. One of the most common presentations of the disease is fever of unknown origin. Early diagnosis can be difficult because fever of unknown origin is more commonly seen with many other conditions. Ambiguity in presentation and lack of serologic markers make diagnosis difficult. AOSD is typically considered as a diagnosis of exclusion and a definitive diagnosis should be made by excluding infectious, malignant, and other connective tissue diseases.

Material: A 46-year-old female presented with fever associated with chills for five months, low back pain radiating to bilateral lower limbs, joint tenderness for one month, vomiting and rashes all over the body for four days, and cough and sore throat for one week. No other significant past history. On examination, temperature: 101.1 f, other vitals: stable, systemic examination: normal.

Observation: Hemoglobin: 9.7 gm /dL, **Total WBC**: 19,000/cmm, **LFT AND RFT**: normal, **Dengue** NS1Ag, Ig M, Ig G: Negative, **Chikungunya:** Negative, Leptospira IgM: Negative.

Serum protein electrophoresis: Suggestive of chronic inflammatory response, **RA Factor**: Negative**, ANTI CCP**: 4.2 U/mL (<25), **KOH mounting**: Budding yeast cells seen, **Gram stain**: No organism seen, ZN **stain: Acid**-fast bacillus not detected,

CBNAAT: Tuberculosis: Not detected, **Blood culture**: No growth after 48 h incubation.

Urine organism: *Klebsiella pneumoniae***, X-Ray, ECG and 2d Echo:** Normal.

HRCT: S/o: Mildly enlarged lymph nodes in pretracheal and precarinal regions. Hepatomegaly and tiny calcification? Granulomatous.

Conclusion: AOSD is a rare autoimmune disorder. The most characteristic clinical presentation of this condition is fever, arthralgia or arthritis, sore throat, and skin rash. Fever of unknown origin is one of the most common presentations of AOSD. Diagnosis is based on the exclusion of inflammatory and neoplastic diseases, and no definite serologic marker is available at present.

Abstract 38

Cardiometabolic markers in obesity: A cross-sectional study

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Background and Introduction: In India, the prevalence of obesity (body mass index (BMI) ≥25 kg/m^2) is 9.8%–26.6%. Studies reveal that not all obese have a high cardiovascular (CV) risk. Castelli Risk Index (CRI) I & II and atherogenic index of plasma (AIP) are associated with enhanced CV risk. This study was undertaken to assess the CV risk in subtypes of obesity using CRI-I, II, and AIP.

Material and methods: A cross-sectional study including 128 adults with BMI ≥18.5 kg/m^2 presenting to Medicine OPD was undertaken. Subjects with thyroid, liver, and renal dysfunction, pregnancy, on steroids, statins, and anticancer drugs, and with implanted cardiac pacemakers were excluded. The sample size was calculated to be a minimum of 82 subjects based on a study that showed that AIP, CRI I, and II had a positive association with BMI ($r = 0.22$, $p = 0.008$). After a detailed history, physical examination, anthropometric measurements, and body fat (BF)% by Bioimpedance were recorded. A blood sample was processed for lipid profile and fasting blood sugar on an autoanalyzer. Subjects were divided into metabolically obese non-obese (MONO), metabolically healthy obese (MHO), metabolically obese obese (MOO), and metabolically healthy non-obese (MHNO). AIP, CRI-I, and II were calculated.

Results and discussion: MONO, MHNO, MOO, MHO constituted 20.3%, 37.5%, 21.8%, and 20.3% of the subjects. MONO group had the highest values for AIP, CRI-I, CRI-II, and LDL. CRI-II showed a positive correlation with BMI ($r = 0.257$). AIP showed a specificity of 81.08% and a sensitivity of 77.78% at a cut-off of 0.08 to identify subjects of higher CV risk amongst the obese.

Conclusion: AIP, CRI-I, and CRI-II can be used as low-cost tools for screening the Indian population at higher risk of CV disease to reduce the burden of non-communicable diseases.

Abstract 39

An uncommon presentation of scorpion envenomation

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Introduction: Scorpion bites are common in India, particularly in the rural areas. Among 86 species of scorpions present in India, *Mesobusthus tumulus* (Indian red scorpion) and *Heterometrus swammerdami* are of medical importance. Though local symptoms, including severe pain and burning sensation at the site of the sting, are the most common manifestations, systemic complications can ensue. Cardiovascular manifestations are particularly prominent following stings by the Indian red scorpion. Such bites infrequently have serious sequelae, including myocarditis, acute pulmonary oedema, life-threatening cardiac arrhythmias, cardiogenic shock, and even death.

Case report: A 45-year-old male patient was admitted with a history of a red scorpion bite between the ring and a little finger on the left side while working in farms. It was followed by retrosternal cardiac chest pain, which was radiating to the left arm associated with perspiration and breathlessness. There was no significant medical illness in the past. On admission, the heart rate was 48 beats/min irregular, and the blood pressure was 80/60 mmHg. The patient had signs of autonomic dysfunction in the form of hypotension,

bradycardia, and pulmonary edema. Systemic examination revealed bilateral basal rales on auscultation.

Observation: Laboratory parameters: Hb: 14.3 g/Dl, WBC: 18.500/cumm, platelets: 2.4 lakh, INR: 1.3, RBS: 128 mg/dL, urea: 28 mg/dL, creat: 1.0 mg/dL, Sodium: 136 meq/L, Potassium: 3.6 meq/L, Calcium: 10.4 mg/dL, Magnesium: 2.2 mg/dL, CPK-MB: 640 mg/dL, Trop-I: 1.49 ng/Dl. 2D-ECHO: EF: 35%, RVSP: 60 mmHg, dilated LV, posterior wall, inferior wall, and basal anterolateral wall akinetic. Chest X-ray: cardiomegaly, pulmonary edema. ECG: Ventricular premature complexes and ischemic changes, bradycardia.

Discussion: Scorpion venom is a water soluble antigenic complex mixture of neurotoxins, cardiotoxin, nephrotoxin, hemolysins, phosphodiesterases, phospholipases, hyaluronidases, histamine, and other chemicals. In our patient, scorpion bite-induced pulmonary edema, including clinical symptoms, dynamic changes of ECG, and elevated cardiac enzymes, were present. Probably, coronary artery vasospasm-induced scorpion envenomation has precipitated the symptoms in the present case. Pulmonary edema occurs very rarely after scorpion envenomation.

Conclusion: Cardiac manifestations like myocarditis, pulmonary edema, and cardiogenic shock after scorpion envenomation were observed in the present case and were managed by supportive measures and prazocin (alpha adrenergic blocker). In the present case, ECG changes, hypotension, and bradycardia were present, hence it is recommended to monitor each patient with a scorpion bite to prevent catastrophic events.

Abstract 40

Out-of-pocket expenditure for under-5 childhood illnesses and the components contributing to the economic burden

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Introduction: Out-of-pocket expenditure (OOPE) on health in India may limit achieving universal health coverage. Currently, evidence on components of OOPE is limited. Additionally, most estimates do not dissect OOPE into its components based on the sociodemographic characteristics of patients.

Objective:

1. To determine the OOPE for under-5 childhood illnesses.
2. To delineate the components contributing to economic burden.

Material and methods: A cross-sectional study was conducted from January to June 2023 in an urban poor locality of Bangalore after obtaining Institutional Ethical Clearance. The sample size calculated was 192.

A door-to-door survey was conducted in the Yarab Nagar, and the mother of children who had any illness in the past six months was interviewed using a standardized, validated questionnaire regarding information on costs of medicine, doctor consultation, diagnostics tests, and non-medical costs. Those mothers not willing to give consent were excluded. Median healthcare expenditure with an interquartile range was calculated.

Results: A total of 195 mothers were interviewed, among whom 60.5% had sought treatment from private facilities, with 5.2% perceiving the economic burden. The median cost of OOPE was 550 (300–1000), with direct costs of 500 (300–937) and indirect costs of 350 (150–1000). The major factors contributing to the OOPE were hospital charges followed by investigations.

Conclusion: The OOPE for common illnesses in under-5 children is still substantial, as more than 5% of the families perceived it as an economic burden. There is a need for SBCC to avail free services from the government sector.

Keywords: Out-of-pocket expenditure, Under-5 children, Components of OOPE, Urban poor locality

Abstract 41

Analysis of ICU admissions in obstetrics

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Introduction: Maternal mortality is a critical indicator to assess the quality of services provided by a healthcare system. Women who experienced and survived a severe health condition during pregnancy, childbirth, or postpartum are considered as near-miss or severe acute maternal morbidity cases. The major reasons and causes are the same for both MNM and MDR, so a review of MNM cases is likely to yield valuable information regarding severe morbidity, which could lead to the death of the mother if not intervened properly and in time. According to WHO, "a woman who survives life-threatening conditions during pregnancy, abortion, and childbirth or within 42 days of pregnancy termination, irrespective of receiving emergency medical/surgical interventions, is called maternal near-miss.

Aims and objectives: To study the cause and outcome of obstetric cases admitted in the ICU.

Material and methods: Retrospective study of ICU admissions in obstetrics during the period of January 2021 to January 2023 at M S Ramaiah Medical College Hospital.

Results: In this study, the hospital maternal near-miss incidence ratio was 10%. In our study, we found the most common morbidity was postpartum hemorrhage. These near-miss diagnoses were comprised of 30% cases of hypertensive disorder of pregnancy, 28% cases of major obstetric hemorrhage, 10% cases of severe systemic infection or sepsis (4.40%).

Conclusion: Hemorrhage and hypertension disorders are the leading causes of maternal near-miss. Prompt diagnosis and adequate management of near-miss cases can reduce mortality rates.

Abstract 42

A retrospective study on maternal and neonatal outcomes of adolescent pregnancies at a referral hospital in Bangalore

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Need for the study: Adolescent mothers (aged 10–19 years) face higher risks of eclampsia, puerperal endometritis, and systemic infections than women aged 20–24 years, and babies of adolescent mothers face higher risks of low birth weight, preterm birth, and severe neonatal condition.

Hence, this study is undertaken with the following objectives:

Objectives:

1. To describe the socio-demographic profile of the study subjects.
2. To delineate the maternal and neonatal outcomes in adolescent pregnant women.

Material and methods: This study was a retrospective case record analysis with a descriptive study design of all adolescent pregnancies delivered between October 2021 and September 2022 with mothers aged between 15 and 19 years at a first referral hospital in Bangalore. Pregnancy outcomes of all the deliveries conducted in the study hospital were reviewed using the parturition book data. The details regarding socio-demographic profile, ante-natal history, and maternal and neonatal outcomes post-discharge were collected through telephonic communication after obtaining informed consent. All the details were recorded in a pre-designed, semi-structured questionnaire. The obtained data were analyzed using appropriate descriptive statistics.

Inclusion criteria: All those mothers who were aged less than 19 yrs during the study period. Exclusion criteria: Subjects who could not be contacted.

Results: The most common maternal complication is anemia, followed by pregnancy-induced hypertension (8.5%), and the most common neonatal complication is low birth weight (21.2%).

Conclusion: Despite continuous efforts by the healthcare administration, the expected outcomes in terms of usage of contraception and delaying the first pregnancy has not been attained.

Abstract 43

Comparison of cardiopulmonary exercise testing abnormalities in post COVID-19 patients exhibiting different pulmonary function test patterns

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Background: Cardiopulmonary exercise testing (CPET) is a dynamic and non-invasive method used to evaluate the cardiovascular and respiratory systems while at rest and during exercise. It provides valuable information about an individual's functional capacity. The emergence of COVID-19 as a significant global pandemic has led to various complications affecting multiple organs, particularly the lungs. This study aimed to examine the abnormalities detected through CPET in post-COVID-19 patients who exhibited different patterns of pulmonary function test results.

Material and methods: For the current study, we recruited 45 patients who tested positive for COVID-19 and were under follow-up care. The data obtained from their cardiopulmonary exercise tests were analyzed to determine any correlations with the severity of their COVID-19 symptoms. Prior to conducting this research, ethical approval was obtained from the Institution Ethics Committee, specifically the Ethical Review Board at Metro Hospitals and Heart Institute. Additionally, pulmonary function tests were conducted to classify the patients into categories based on their lung function, including normal, restrictive, obstructive, and mixed classifications.

Results and discussion: We observed that, on the basis of PFT, 46.67% of post COVID-19 patients recruited exhibited a restrictive pattern of airway disease, whereas 42.22% had a normal pattern of pulmonary function. We observed an increase in the proportion of post COVID-19 patients with ventilatory limitation in the restrictive pattern of airway disease when compared with the normal pattern (61.9% vs. 35.7%). In patients with a restrictive pattern of airway disease, ventilatory limitation was the most common abnormality (61.9%), followed by gas exchange abnormality (38%) and peripheral muscle deconditioning (38%). Cardiac limitation was the least common abnormality observed in all groups.

Conclusion: CPET is a reliable method for the evaluation of post COVID-19 sequlae and is even more useful in evaluating the cause of dyspnea in conditions where the pulmonary function test is normal. The increase in the occurrence of ventilatory limitation in patients exhibiting restrictive patterns of airway disease, when compared with normal patterns gives more insight into the role of COVID-19 in inducing long-term functional limitation in patients.

Keywords: CPET, COVID-19, Post COVID-19 sequlae

Abstract 44

Evaluation of vitamin D receptor expression in triple negative breast cancer tumors

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Background: Triple negative breast cancer (TNBC) lacks the expression of estrogen receptor (ER), progesterone receptor (PR), and human epidermal growth factor receptor 2 (HER2) and making it challenging to treat, as it does not respond to hormonal targeted therapies. Recent studies have suggested a potential role for the vitamin D receptor (VDR) in the prognosis and management of TNBC. The VDR is a nuclear receptor that regulates calcium homeostasis and cell proliferation. This study mainly aimed to analyze VDR expression in invasive ductal carcinoma of TNBC, indicating VDR as a therapeutic target against TNBC.

Method: The previously confirmed ER, PR, and HER2 negative of 30 TNBC adenocarcinoma patients and formalin-fixed paraffin tissue blocks were collected from March 23, 2018, to May 9, 2023, in the Department of Pathology of Shri B M Patil Medical College, Hospital and Research Centre, Vijayapura, after permission from the Institutional Ethics Committee. Immunohistochemistry is a technique for evaluating VDR expression in tissue specimens.

Results: In this study, VDR expression was determined based on the fraction of positively stained nuclei in tumor cells and defined as

negative if 10% of tumor cells had stained nuclei and positive if > 10% of tumor cells were stained. Most tumors have VDR expression in the cytoplasm and cell membrane of cells (70%–80%) and the nucleus (20%). There was a wider distribution of intensity: low intensity ($n = 6$, 20%), moderate intensity ($n = 8$, 26.6%), and high intensity ($n = 16$, 53.3%). The distribution of scores between cytoplasmic and cell membranes was various staining intensities of VDR expressions in the tumor.

Conclusion: The present study indicates that high VDR expression in TNBC tumors may be more responsive to VDR-targeted therapies.

Keywords: TNBC, VDR, Immunohistochemistry

Abstract 45

Awareness regarding maternal health services and birth spacing among the postnatal mothers at a district hospital, Bangalore: A cross-sectional study

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Background: In developing countries, maternal mortality still remains a challenging issue. To address this, various government schemes have been initiated to provide financial and healthcare support to pregnant and postnatal women. In India, family planning programs promote proper birth-spacing and termination of childbearing at 30–34 years of age, all of which will finally lead to smaller family size patterns. These practices will provide a greater chance and tremendous impact on the reduction of maternal mortality and infant mortality. Generally, the complications of pregnancy and maternal risk of childbearing increase beyond 30 years. Mothers of the advanced age group experience more obstetrical complications, and the risk of stillbirths neonatal, and post-neonatal mortality increases with both advancing maternal age and increasing parity.

Objective: To assess the knowledge and awareness regarding maternal health services and schemes and postpartum family planning and birth spacing among postnatal mothers.

Methodology: A cross-sectional study was conducted from March to August 2023 among post-natal mothers admitted in post-natal wards, in-born wards of Kangaroo mother care, and postpartum care units in Vanivilas Hospital, BMCRI, Bangalore. A sample size was calculated as 131 based on the parent study by Pranita Achyut *et al*. A pre-tested, semi-structured, validated questionnaire was used for the face-to-face interview method. Data collected were entered in Microsoft Excel and analyzed using SPSS v. 24.0.

Results: It was observed that 52.9% of women were in the 21–25 years age group [belonging to urban areas (59.4%) from the middle class (49.6%) with high school education (47.3%)]. Association between the place of living with education ($p = 0.026$), an association of education with maternal and child health services ($p = 0.024$), and birth spacing ($p = 0.0001$) were found to be statistically significant. The study revealed that 96.1% of participants were aware of the Janani Suraksha Yojana (JSY) and Janani Shishu Suraksha Karyakram (JSSK) schemes, while only 25.7% were aware of and utilized the Karnataka Mathrushree Scheme.

Conclusion: The study highlights the high awareness levels of national maternal health schemes like JSY and JSSK but lower awareness of state-specific schemes such as the Karnataka Mathrushree Scheme. In this study, most of the women were aware of maternal services in general, but there is a lack of comprehensive knowledge of the services. This study showed that age, education, and parity had a significant impact on mothers' utilization of maternal health care. The awareness regarding the methods available and the need for birth spacing should be emphasized, and there are still women with misconceptions about the adverse effects associated with contraceptives and spacing methods. Targeted awareness campaigns are essential for improving maternal healthcare in urban India.

Keywords: Post-natal mothers, Maternal and child health services, Birth spacing, Awareness, Utilization, Karnataka Mathrushree Scheme

Abstract 46

Iohexol-induced toxic epidermal necrolysis: A rare Case Report

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Introduction: Toxic epidermal necrolysis (TEN) is a rare, life-threatening, drug-induced skin disease, also known as Lyell's syndrome, and is a common cause of significant skin and mucous membrane disintegration. Thus, this case of TEN induced by Iohexol has been found to be rare in relevant scientific literature.

Case details: An 83-year-old male patient diagnosed with pancreatic pseudocyst was admitted to Hassan Institute of Medical Sciences (HIMS) surgery department two months ago and was advised CECT abdomen scan, during which the patient was given contrast Iohexol. Two days following this, the patient developed erythema over the back, which gradually extended to the axilla and upper limbs. Multiple erosions of various sizes and shapes are present on the back and upper limbs and on genitalia, with conjunctival congestion and hemorrhagic crests on both eyelids and lips. Provisional diagnosis of toxic epidermal necrolysis was made by a dermatologist and the patient was put on Inj. Dexamethasone, Inj. chlorphenaramine malate, Tab. cyclosporine, and antibiotics (Inj. Piperacillin+Tazobactam). The rashes started to subside after 8 days of supportive treatment.

Conclusion: As there are very few reports on Iohexol-induced TEN, in this paper, we report a case of TEN induced by non-ionic iodinated contrast medium iohexol and help in preventing Iohexol-induced TEN.

Keywords: Iohexol, Adverse drug reaction, Toxic epidermal necrolysis

Abstract 47

Assessment of knowledge of obstetric danger signs and its associated factors among pregnant women attending antenatal clinic of a tertiary care center of a medical college: A cross-sectional study

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Introduction: According to WHO, maternal mortality is unacceptably high. About 2,87,000 women died during and following pregnancy and childbirth in 2020. Almost 95% of all maternal deaths occurred in low and lower middle-income countries in 2020, and most could have been prevented. Factors that prevent women from receiving or seeking care during pregnancy and childbirth are social determinants, including income, access to education, race, and ethnicity, that put some sub-populations at greater risk; harmful gender norms and/or inequalities that result in a low prioritization of the rights of women and girls, including their right to safe, quality, and affordable sexual and reproductive health services. Maternal morbidity and mortality could be prevented and minimized significantly if women and their families recognize obstetric danger signs and promptly seek health care. Knowledge of the danger signs of obstetric complications is the important first step in accepting applicable and timely referral to obstetric care.

Aims and objectives: To study the knowledge regarding obstetric danger signs and their associated factors among pregnant women attending ANC. To obliterate the gap in knowledge by raising awareness through ante-natal counseling.

Material and methods: The current study was a hospital-based observational cross-sectional study conducted among ANC mothers attending the ANC clinic in the tertiary care hospital of Jamnagar district for a duration of 6 months. The sample size was 390, calculated by taking the prevalence of knowledge as 42% from a previous reference study. The sample population was selected using consecutive sampling until the desired sample size was reached.A pre-tested and semi-structured questionnaire was used. Ethical clearance was taken from the ethical committee of the institute. Data was collected using Google form and MS Excel and further analyzed using SPSS (v. 26).

Results: In the current study, 47.17% of respondents had good knowledge, and 52.8% had poor knowledge regarding obstetric danger signs.

Conclusion: The following factors were found to be statistically significantly associated with knowledge regarding obstetric danger signs: Age, educational status of pregnant women, occupation of pregnant women, number of ANC visits, and whether counseled during ANC about obstetric danger signs. Counseling during the ant-enatal period is crucial in raising awareness.

Keywords: Maternal mortality, Knowledge, Obstetric danger signs, ANC, Health care

Abstract 48

Broth microdilution for colistin susceptibility in carbapenem resistant isolates

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Introduction: Polymyxins are the drug of choice for carbapenem resistant organisms. Colistin belongs to the polymixin group of antibiotics used commonly in ICU for severe infections. The increasing use of colistin has led to the worldwide emergence of the mobile colistin resistance gene (mcr). According to Clinical and Laboratory Standards Institute (CLSI) guidelines 2023, the susceptibility of colistin should be reported by broth microdilution, Colistin broth disc elution method, and colistin agar test. The present study aims to characterize colistin susceptibility in carbapenem resistant isolates, a comparison between automated AST and BMD, and to detect genes responsible for colistin resistance.

Material and methods: *Source of data*: Samples received in the microbiology laboratory from patients admitted to Ramaiah Medical College Hospital from January 2023 to December 2023. *Study period*: August 2023 to August 2023. *Study design*: Cross-sectional study. *Inclusion criteria*: Gram negative bacilli from urine samples that show resistance to at least one of the carbapenems: meropenem, imipenem, and doripenem resistance defined as an MIC of ≥4 μg/mL and ertapenem resistance defined as an MIC of ≥2 μg/mL. *Exclusion criteria*: Isolates of repeated samples from the same patient were not included in the study.

Method of study: All patients with symptoms of urinary tract infection between August 2022 and 2023 were enrolled in the study. Urine samples were collected in a sterile container and analyzed at the Microbiology Laboratory RMCH. The sample is inoculated on CLED agar plates for isolation of the organism. Identification and antibiotic sensitivity testing of the organism will be done by automated ID & AST system.

Carbapenem resistance is defined according to the CLSI criteria 2023, with:

- Ertapenem resistance is defined as a MIC of 2 μg/mL.
- Meropenem, imipenem, and doripenem resistance is defined as an MIC of 4 μg/mL. These isolates were subjected to broth microdilution, for determination of MIC of colistin.

Ethical clearance was granted for the study

Sample size calculation: Based on the literature review, in the previous study conducted by Mohanty *et al.*, it was found that the proportion of colistin-resistant isolates was 12%. In the present study, expecting similar results considering 95% confidence level and 6% absolute precision, the sample size for the study has worked out to be a total of 113 samples.

Statistical analysis: Qualitative variables like carbapenem resistance, phenotypic characterization, and colistin susceptibility will be presented using frequency and percentages.

Results and discussion: A total of 115 carbapenem resistant uropathogenic isolates were collected from Vitek compact two

automated systems in the year 2023. These isolates were subjected to broth micro-dilution, and 16 isolates showed colistin resistance.

Conclusion: Colistin MIC should never be reported by the automated system due to its inaccuracy in MICs. Phenotypic methods like BMD, CBDE, or colistin agar testing to be done for MIC calculation as per CLSI 2023 guidelines. As BMD is laborsome, most of the institutes fail to do it. But, the method gives an accurate MIC, which helps in deciding the need for colistin in multidrug-resistant infections seen in ICU settings. The study also showed the difference in Vitek compact two and BMD MICs of colistin, the discordance proved the need for BMD

Abstract 49

A rare type of cardiac myxoma

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Introduction: Myxomas are the most common primary cardiac tumor. It is estimated that more than 75% of myxomas originate in the left atrium either at the mitral annulus or the fossa ovalis border of the nteratrial septum, 20% arise from the right atrium while 5% stem from both atria and the ventricle.

Material and methods: A middle-aged male patient who is a known diabetic came with breathlessness and bilateral lower limb swelling for two months. On examination, bilateral pitting pedal edema was present, JVP was 11 cm of H_2O, and bilateral fine crepitation all over the lung fields was present. A clinical diagnosis of congestive cardiac failure was made. 2D echocardiography (Trans-thoracic echocardiography) showed two sessile mass, one in each ventricular apex, and reduced left ventricular systolic function was found. Transesophageal echocardiography showed a large sessile mass at the left ventricle apex measuring around 2.4×4 cm, Moderate size sessile mass at the right ventricle apex was found. Cardiac MRI showed a heterogenous lesion in the apical regions of the bilateral ventricle apical region suggestive of myxoma. The patient has been advised to follow up after one week.

Result and discussion: A diagnosis of cardiac myxoma bi-ventricular type was made, which is a rare type of cardiac myxoma. Hereby, there is a case of a rare type of cardiac tumor.

Conclusion: In conclusion, we describe our case of multiple cardiac myxomas in a 58-year-old male. The occurrence of biventricular myxomas has been rarely reported. The patient is on regular follow-up.

Keywords: Bi-ventricluar myxoma - a rare type cardiac myxoma

Abstract 50

Assessment on eHealth literacy level and Ayushman Bharat Digital Health Accounts (ABHA) coverage among college students in Urban Bengaluru

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Introduction: India is on its way to revolutionizing health care by constructing a digital health system like the Ayushman Bharat Digital Mission, aiming to create an integrated digital health infrastructure. There is an unmistakable need to accelerate digitization in order to bridge the existing gap between different stakeholders in the healthcare ecosystem in order to improve health outcomes, supporting Universal Health Coverage (UHC). Hence, this study was conducted.

Objectives: Among the college students studying in selected colleges in urban Bengaluru, to assess the knowledge about digital health literacy and to determine the Ayushman Bharat Health Account (ABHA) coverage.

Material and methods: A community-based, cross-sectional study was conducted in selected colleges in urban Bengaluru. A total of 245 college students were surveyed using a questionnaire to assess digital health literacy and ABHA coverage. Data were analyzed using SPSS v. 24.

Results: A total of 245 sample sizes were analyzed, of which 60% belong to the age group of 18–20 years and 55.5% are females. Around 63% had high knowledge about digital health literacy. Around 27% of students had health-related apps/websites on their smartphones, and 18% used any app/online website for booking doctor consultations. One-third, around 38.7%, had heard of ABHA or a unique health ID, and 7% had an ABHA number or unique health ID.

Conclusion: The study found that many students had moderate knowledge about eHealth literacy and lacked awareness of ABHA and digital health resources. Hence, this study highlights the need for enhanced eHealth literacy among college students and the potential of educational interventions to promote the adoption of digital health tools like ABHA. Bridging the digital health divide is crucial in achieving UHC and aligning with global digital health strategies.

Abstract 51

The association of food addiction with obesity in young adults belonging to urban and rural populations

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Introduction: Food addiction (FA) is significantly linked to obesity, which typically results from an imbalanced diet and irregular physical activity. There is an emerging importance to study FA among different populations, as the prevalence of obesity and associated disorders has shown a rapid increase, in rural areas when compared to urban areas. The current project aims to investigate the prevalence of FA in young adults in urban and rural areas, as well as the relationship between FA and obesity in young adults.

Methodology: This cross-sectional study was conducted in Bangalore, India, between August and October 2022. There were 120 participants in the study, with 60 in each of the two groups (urban and rural). The socio-demographic information, height, weight, and waist circumference were measured with standardized equipment and reported in a pre-structured questionnaire. Two multilingual doctoral-level experts who had never seen the YFAS (Yale food

addiction scale) before translated it into the local language for the subjects to understand. Scores for the YFAS were computed. Data analysis was done using statistical tools, Microsoft Excel, and SPSS v. 22 (IBM SPSS Statistics, Somers, NY).

Results: The prevalence of FA was found to be approximately 16.7% and 11.7% among young adults in urban and rural areas, respectively. The study population had 52 (43.3%) male and 68 (56.6%) female subjects. The average age of the study participants was 21.52 years in urban subjects and 21.80 years in rural subjects. The most frequent FA symptoms in both the urban and the rural populations were persistent desire or repeated failure to quit (57% and 48%, respectively), followed by the development of tolerance (45% and 25%, respectively).

Conclusion: The prevalence of FA may be higher in urban than in rural populations, however, the prevalence is rapidly increasing in rural areas such that no statistically significant difference was reported. Studying the prevalence of FA in different population groups can also be ascertained to enable a better understanding of the concept and its pathophysiology.

Keywords: Food addiction; Urban; Rural; Obesity; DSM-5; Yale scale; YFAS; Waist circumference

Abstract 52

Aberrant origin of right hepatic and inferior pancreatico duodenal artery: A case report

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Introduction: Variations in the major arteries of the abdomen are quite common and knowledge of such variations is required to avoid complications during surgical interventions of GIT and posterior abdominal wall. Normal hepatic anatomy occurs in approximately 80% of cases, in the remaining 20%, multiple variations have been described. Anatomical variations of the hepatic arteries, coeliac trunk & superior mesenteric arteries are of considerable importance in gastroduodenal surgeries, liver transplants, laparoscopic & radiological interventions.

Objective: To study the variations in the branching pattern of the Coeliac trunk and Superior mesenteric artery.

Material and methods: During routine dissection classes conducted for first-year MBBS students in the Department of Anatomy of St. Peters Medical College, Hospital and Research Institute, Hosur, Tamil Nadu, India, we encountered multiple rare variations in the arteries of the abdomen of an aged male cadaver were dissected and reported.

Case report: During routine cadaveric abdominal dissection of an aged male, multiple arterial variations were observed, which included the aberrant origin of right hepatic arteries and inferior pancreaticoduodenal artery from a common trunk—a first branch superior mesenteric artery. The inferior pancreaticoduodenal artery was soon divided into anterior and posterior branches and anastomosed with respective branches of the superior pancreaticoduodenal artery. The aberrant right hepatic artery was the other branch from this trunk, which was coursing behind the head of the pancreas and first part of the duodenum and was entering into the right margin of the lesser omentum to the right of the bile duct and portal vein. In its course, it was crossed by a cystic duct on its way to the hepatic duct and further gave a cystic artery to the gall bladder and then divided into two right hepatic branches, of which the right extreme was the biggest. The Coeliac trunk, which was the first ventral branch of the aorta, divided soon after its origin into splenic, common hepatic, and left gastric arteries. A common hepatic artery was coursing along the upper border of the pancreas to the right and gave the gastroduodenal branch to become a proper hepatic artery, which further gave a middle hepatic artery reaching the porta hepatis and another trunk which gave a second middle hepatic artery and left hepatic artery. The right gastric artery was found to arise from the left hepatic artery, and it followed a subhepatic course to enter into lesser omentum to anastomose with the left gastric artery.

Conclusion: A thorough knowledge of vascular anatomy and variations of ventral aortic branches is critical to effective interventional treatment of the pathological conditions related to the organs supplied by them, and it has to be supplemented with careful interpretation of angiographic findings of the same if required which permits an accurate and detailed analysis of splanchnic vascular anatomy. It helps to determine the treatment options and to prevent complications arising from such aberrant arterial patterns.

Keywords: Hepatic artery, Inferior pancreatico duodenal artery, Right gastric artery, Superior mesenteric artery, Coeliac trunk

Abstract 53

Unilateral multiple arterial variations in the upper limb: A case report

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Introduction: The knowledge of variations in the arterial pattern of the upper limb is very important for orthopedic & vascular surgeons and interventional radiologists as it may be the cause of severe hemorrhages in injuries or may result in compression syndromes. The brachial artery is one of the major arteries of the upper limb & arises as a continuation of the axillary artery extending from the lower border of teres major muscle to the neck of the radius, where normally it ends by giving radial and ulnar arteries as the terminal branches. Trifurcation of the Brachial artery is less frequently mentioned, and here we noted a rare variant of trifurcation in addition to which anomalous origin of radial recurrent artery from superficial ulnar artery and tortuous superficial palmar arch with abnormal branching pattern was also observed.

Objective: To study the variations in the branching pattern of arteries of the upper limb.

Material and methods: During routine dissection classes conducted for 1st MBBS students in the Department of Anatomy of St. Peter's Medical College, Hospital and Research Institute, Hosur, TamilNadu, India, we encountered multiple rare variations in the arteries of the left upper limb of an aged female cadaver were dissected and reported.

Case Report: During routine dissection, multiple left upper limb arterial variations were observed, which included trifurcation of the left brachial artery; soon after its formation, it trifurcated to form a radial artery, ulnar artery, and a common trunk, which further divided to give two muscular branches one each to coracobrachialis and brachialis, profunda brachii artery and another common trunk yielding a second set of anterior and posterior circumflex humeral arteries as the first set aroused from 3rd part of the axillary artery and formed arterial circles around the surgical neck of the humerus and abnormal origin of radial recurrent artery from the ulnar artery which had a lateral course in comparison with radial artery and a tortuous superficial palmar arch with arteria princeps pollicis and indicis along with muscular branch coming from common trunk. Both superficial branches of radial & ulnar arteries forming the superficial palmar arch had a tortuous course passing superficial to the flexor retinaculum of the hand.

Conclusion: Knowledge of variations in the artery and its branches is of great clinical significance as it might restrict the results of vascular procedures associated with the vessel for example, vascular access via the radial artery.

Keywords: Brachial artery, Radial artery, Ulnar artery, Superficial palmar arch, Variation

Abstract 54

A study of the relation between adenoid hypertrophy and absolute eosinophil counts

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Background and Introduction: This study mainly focuses on the relation between adenoid hypertrophy and absolute eosinophil count (AEC). Children with adenoid hypertrophy usually have an increased incidence of allergy and increased AEC count. This study is done to evaluate the effect of eosinophilia on the severity of symptoms of adenoid hypertrophy and thus reduce the incidence of adenoidectectomy in children.

Material and methods: A retrospective study was conducted, which included case records of 66 children diagnosed and operated for adenoid hypertrophy in the department of otorhinolaryngology from the age group of 1–18 years in the past 11 years from 2012 to 2022. AEC count was determined based on the eosinophil count obtained from laboratory reports. The association between adenoid hypertrophy and AEC was determined based on a chi-square test.

Results and discussion: Most of the patients presented with complaints of mouth breathing (83%), snoring (70%), and a history of recurrent upper respiratory tract infections (52%). It was found that the majority of the children with adenoid hypertrophy (69%) have AEC > 400 cells/μL. AEC is also directly related to the grade of adenoid hypertrophy and, thus, the severity of symptoms. All children with grade 2 adenoid hypertrophy had AEC less than significant value. It was seen that 85% of the kids with grade 4 adenoid hypertrophy had significantly increased AEC.

Conclusion: Our study indicates that there is a strong relation between adenoid hypertrophy and AEC. AEC helps in determining the severity of adenoid hypertrophy and, hence severity of symptoms. Hence, AEC is a good diagnostic predictor of adenoid hypertrophy.

Based on the severity of symptoms which can be assessed by measuring the AEC, either medical or surgical treatment can be planned accordingly.

Keywords: Severe adenoid hypertrophy, Absolute eosinophil count, Allergy in children, Inferior turbinate hypertrophy

Abstract 55

Comparison of self-reported empathy levels among medical undergraduate students in Eastern India: A questionnaire-based cross-sectional study

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Introduction: Empathy happens to be one of the must-have competencies in a doctor, and communication plays a vital role in achieving it. It performs a dual role in capturing a patient's past medical history and transmitting information and additionally has a therapeutic role in supporting the patient's healing process. It has proven to have a positive effect on psychosocial outcomes (e.g., quality of life, fear, depression, and anxiety) and on objectively measurable outcome parameters, namely reduced recovery time and pain reduction. Studies have shown a decline in empathy levels in undergraduate medical students as they progressed through their professional educational curriculum. In contrast, there were some studies that found senior students being significantly more empathetic than junior students. In view of such variation among empathy findings from different countries, we had a need to understand levels of empathy among medical students in the Indian scenario. Hence, we conducted the present study to assess self-reported empathy levels among undergraduate medical students in Bhubaneswar City of Eastern India.

Material and methods: A descriptive cross-sectional study was conducted among three Medical colleges in Bhubaneswar City during July 2022–September 2022.

E-survey link was circulated among 810 students through their e-mails. The questionnaire had two parts. The first part included socio demographic information, whereas, in the second part, the students' empathy level was assessed using the Jefferson Scale of Physician Empathy-Health Profession Students Version Questionnaire. The score range varied from 20 to 140: the higher the mean score, the greater the self-reported empathy level. The collected data were analyzed using SPSS v. 24. To test gender distribution differences among different years the chi-square test was used. To compare the differences between study variables, One-way analysis of variance, including *post hoc* tests were used.

Results: The mean±standard deviation empathy score was 91.55 ± 11.75, 91.86 ± 12.24, 93.26 ± 11.25, 93.36 ± 12.32, and 88.35 ± 12.02 among the first-year, second-year, third-year, final-year, and interns, respectively, showing a significant statistical difference.

Discussion: The mean empathy score of the present study ranges from 88.35 to 93.36, which was in accordance with the study conducted by Díaz Narváez *et al*. The probable reason for the same could be that initially, when students join the dental school, they are not aware of their responsibilities. Gradually, when they came in contact with patients, they developed empathy. Additionally, the increase in students of final-year could be attributed to role-playing, lectures, or communication skills completed recently in their classes, according to Prabhu *et al*. Regular clinical encounters and early analytical exposures to behavioral sciences had shown to increase empathy levels both before and after intervention. Hence, these results suggest that education in the field of behavioral sciences may be effective.

Conclusion: Results of the present study concluded that the highest mean empathy score among final-year students was suggestive of the impact of education in the field of behavioral sciences.

Keywords: Self-reported empathy, Communication, Medical students, Jefferson Scale of Physician Empathy-Health Profession Students

Abstract 56

Attitude towards euthanasia among postgraduates and medical professionals: A cross-sectional study

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Background: Encyclopedia Britannica defines "Euthanasia, also called mercy killing, as an act or practice of painlessly putting to death to persons suffering from a painful and incurable disease or incapacitating physical disorder or allowing them to die by withholding treatment or withdrawing artificial life-support measures." The concept of euthanasia has been a topic undergoing through intense controversies since its embarkment. The term 'euthanasia' is derived from Greek, 'Eu' meaning 'good' and 'Thanatos' referring to 'death,' put together 'good death.' Euthanasia is defined as the quickening of the death of a patient to prevent continued suffering. Medical professionals and postgraduates are faced with many ethical dilemmas regarding requests for euthanasia by patients, the question of how their response would be towards it is an important discussion. Hence, studying their attitudes towards euthanasia remains crucial when they perform or consider euthanasia for patients in the future.

Material and methods: A cross-sectional online anonymous Google form survey using a modified structured questionnaire format was conducted among postgraduates and medical professionals in Sri Siddhartha Medical College and Hospitals, Tumakuru. The Google form was distributed to a total of 130 subjects, which includes both medical professionals and postgraduates, however, non-professionals and under-graduates were excluded from the study.

Results and discussion: On analysis, 60% of the participants disagree to active euthanasia on a non-responsive patient under a doctor's authority. 57.7% agree that it would be wrong to administer euthanasia for a non-responsive patient. 47.7% disagree to passive euthanasia on a patient's request due to severe pain.

Conclusion: Based on the results, it can be concluded that the majority of the participants tend to disagree with active euthanasia despite the patient's request. Though the majority of them disagree with passive euthanasia, they seem to have a neutral opinion on a dying patient's request. Most of the participants disagree even when the patient is in severe pain and on their request. The participants disagree with euthanasia even when there is no recovery and on the doctor's authority.

Keywords: Euthanasia, Doctor's authority, Active euthanasia, Passive euthanasia, Thanatos

Abstract 57

Perspective of ragging among medical students

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Background: "Any conduct, whether by words spoken or written or by an act which has the effect of teasing, treating, or handling with rudeness any other student, indulging in rowdy or undisciplined activities which causes or is likely to cause annoyance, hardship, or psychological-harm or to raise-fear or apprehension thereof in a fresher or a junior student or asking the students to do any act or perform something which such student will not in the ordinary course and which has the effect of causing or generating a sense of shame or embarrassment so as to adversely affect the physique or psyche of a fresher or a junior student." Ragging is now a new and emerging caution among young students of different sectors. It is a very extreme and fearful situation, and hence, this paper focuses on the attitude of students towards ragging. This study helps understand the perspective of ragging among medical students of Tumakuru City.

Material and methods: This research is a cross-sectional and observational study conducted among undergraduate medical students of Tumkur, with a sample size of 170, and data were collected in the form of a Google form questionnaire, including first-year medical under-graduates in Tumkur, excluding other three years of under-graduates.

Results and discussion: On analysis, results showed that 67.5% of students claim that they haven't undergone ragging. 66.1% of students seemed to have entered medical college with a fear of facing seniors, and 31.8% disagreed to continue ragging, with the reason being 'waste of time, feeling insecure, fear of humiliation' among other reasons. However, 85.3% considered ragging as a form of personality development to help themselves connect with juniors socially.

Conclusion: Based on the results, it is safe to conclude that the medical students, Tumkur approve of a monitored form of 'healthy' ragging. They want 'healthy' ragging to be a means of safe and happy communication between seniors and juniors and seek security in case of any untoward behavior during such interactions, and not the complete removal of the concept.

Keywords: Healthy ragging, Medical students, Senior–junior bonding, Personality development, Improper ragging

Abstract 58

Sleep deprivation stress and associated obesity among medical consultants

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Background: Sleep deprivation is very common among healthcare professionals due to unspecified continuous working hours. According to epidemiological studies, sleep deprivation stress of less than seven h can predispose to varying hormonal levels through increased BMI. Therefore, the topic is taken up to study the effects of sleep deprivation stress and associated obesity.

Material and methods: 130 medical professionals and postgraduate doctors are included in the study through a questionnaire created on Google Forms out of which 75 have responded. Obesity-related parameters like BMI, waist circumference, physical activity, and hunger frequency is included. Diabetic, hypertensive, and participants with respiratory disorders were excluded. Statistics are analyzed by a chi-squared test.

Results and discussion: The majority of participants had more than five years of work experience belonging to the age 40–50 years and maintained a healthy lifestyle with 6–7 h of sleep and proper food habits. 60% of the participants were noticed to have a well-balanced professional life, and this is the reason no significant change was observed either in the weight or BMI as well as waist circumference among the participants, irrespective of gender.

Conclusion: Lifestyle modification through good eating habits, good sleep, and physical activity have shown that the majority of participants do not show an increase in BMI and waist circumference. However, the results will be concluded on further responses, which are awaited.

Keywords: Sleep deprivation, Lifestyle management, Obesity, Body mass index (BMI), Work–life management

Abstract 59

Physical fitness and it's association with cognition in young adults

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Introduction: Physical activity has been hypothesized to be effective in maintaining cognitive function and delaying cognitive decline in the elderly, but physical fitness could also be a better predictor of cognitive function. In early adulthood, the phase in which the central nervous system displays considerable plasticity and important cognitive traits are shaped, the effects of exercise on cognition still remains poorly understood. The ability of the brain to adapt to new situations, environments, and consequences of an injury is generally referred to as brain plasticity. It is observed that in rodents, physical exercise improves memory function and structural parameters like synapse density, neuronal complexity, and hippocampus neurogenesis. It was observed that exercise induces neuroprotection in animal models of stroke, traumatic brain injury, and Parkinson's disease. Recently, it was shown that voluntary running significantly restores neural stem cell pool and hippocampus neurogenesis.

Objective: To correlate the association between physical fitness and cognition.

Material and methods: A cross-sectional study was conducted involving 50 undergraduate medical students aged 18 years and above. All were subjected to cognitive tasks such as Six letter cancellation test and Trail making test A, and the scores were recorded. Physical fitness assessment was done by the Harvard step test. Pearson correlation is used to find the correlation between fitness index and cognition.

Results and discussion: Performance in cognitive tasks correlated with physical fitness positively.

Conclusion: Physically fit students had better cognition. So students can be advised to indulge in physical activities regularly to improve their physical fitness as well as cognition.

Keywords: Physical fitness; Harvard step test; Six letter cancellation test; Trail making test A; Cognition

Abstract 60

Role of gingival crevicular fluid analysis in early diagnosis of peri-implantitis

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Background: The majority of studies have been conducted to analyze the presence of cytokines in gingival crevicular fluid (GCF) among different periodontal diseases, but very limited studies have been executed to analyze the peri-implant crevicular fluid (PICF) in peri-implantitis as potential markers for the early diagnosis of peri-implant disease.

Aim: The present study was conceptualized to explore the levels of interleukin (IL)-1β as a diagnostic marker in peri-implantitis.

Material and methods: A total of 40 patients, each having at least one dental implant, were enrolled in the study. Clinical parameters were recorded around each implant and tooth nearest to it. Gingival crevicular fluid/peri-implant crevicular fluid was collected to evaluate the concentration of IL-1β. Conservative treatment was performed in peri-implantitis cases, three months after treatment, clinical parameters IL-1β levels were recorded and compared with their pretreatment values.

Clinical parameters like Modified Plaque Index, Modified Bleeding Index and Probing Pocket Depth were statistically significantly higher in the peri-implantitis group as compared to the healthy implant group and healthy teeth group. IL-1β levels were also statistically significantly higher in the peri-implantitis group in comparison to healthy implants and healthy teeth group.

Conclusion: The study concludes that biomarkers in PICF can be used as a diagnostic tool to supplement the diagnosis of peri-implantitis, along with the use of clinical parameters to make an early diagnosis of peri-implantitis possible.

Keywords: Peri-implantitis, Healthy implant, Interleukin-1β

Abstract 61

Adaptive changes in the posterior pharyngeal wall following large retraction of incisors during comprehensive orthodontic treatment

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Objective: To evaluate the effects of large retraction of incisors on the adaptive changes in the posterior pharyngeal wall and soft palate during comprehensive orthodontic treatment.

Methods: 27 females with Class I mild crowding or spacing who required non-extraction treatment (Group I) and 34 females with Class I bimaxillary dento-alveolar protrusion who required all first premolars extraction for the retraction of their incisors (Group II) were included in the study. The effects of non-extraction and incisor retraction following all first premolars extraction orthodontic treatment on the sagittal dimensions of pharyngeal airway passage (PAP) and posterior pharyngeal wall thickness (PPWT) were evaluated from pre- and post-treatment cephalograms.

Results: The dimensions PAP were comparable among the groups. The length of the soft palate increased ($p < 0.01$), and the thickness of the soft palate decreased ($p < 0.01$) following retraction of incisors, and the difference between the groups was significant ($p < 0.05$). The PPWT was reduced significantly at PPWT2 ($p < 0.05$), PPWT3 ($p < 0.001$), PPWT4 ($p < 0.001$), PPWT5 ($p < 0.001$), and PPWT6 ($p < 0.01$) regions following retraction of the incisors and the difference between the groups was statistically highly significant.

Conclusion: The large retraction of incisors during comprehensive orthodontic treatment in Class I bimaxillary dento-alveolar protrusion malocclusion subjects did not affect the sagittal dimensions of pharyngeal airway passage, but the thickness of the posterior pharyngeal wall reduced significantly as an adaptation to maintain the patency of the upper airway.

Abstract 62

Mini plates: The skeletal anchorage system used for nonsurgical orthodontic treatment in skeletal (surgical) malocclusions: A case report

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Background or Introduction: The skeletal anchorage system (SAS) is a recently developed orthodontic anchorage modality utilizing titanium miniplates and monocortical screws that are temporarily fixed in the maxilla and/or mandible for absolute orthodontic anchorage. The SAS offers a non-surgical orthodontic treatment option for skeletal (surgical) malocclusions, as well as a non-extraction treatment approach for some malocclusions characterized by maxillary or mandibular protrusion and/or anterior crowding.

Material and methods: This report describes a case of an 18-year-old male patient with mandibular prognathism with Class III molar relation. The treatment plan is the extraction of lower third molars and full arch distalization of the lower arch. Mini-plates in the retromolar area is used to provide maximum anchorage.

Results and discussion: The case report shows the efficient use of ramal plates to extend the envelope of discrepancy and correct skeletal malocclusion in adult patients with a less invasive approach.

Conclusion: With the advent of skeletal anchorage, ramal plates have become a viable treatment option for mandibular total arch distalization in Class III patients who are reluctant to have orthognathic surgery. The ramal plates placed in the retromolar fossa offer the advantage of the resultant force vectors to be parallel to the occlusal plane, leading to efficient molar distalization and offers an anatomically suitable placement site for skeletal anchorage with minimal soft tissue irritation.

Keywords: Miniplates, Skeletal anchorage system, Class III malocclusion, Mandibular ramus, En-masse distalization

Abstract 63

Accelerating orthodontic tooth movement-options and mechanics

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Abstract: Traditional orthodontic treatment takes a considerable amount of time for the completion of the treatment, which leads to scenarios where the patients are a little hesitant to take up the treatment. Thus, techniques that accelerate tooth movement by accelerating bone remodeling, thereby accelerating tooth migration, are considered to be a boon to this field.

The methods such as micro-osteoperforation, and physical stimulations like vibrations influence the remodeling by playing a part in the cellular response of bone. With proper case assessment and proper patient monitoring, the promised reduction in the duration of the treatment can be achieved.

Introduction: This fascinating field of orthodontics has been long dedicated to the art and science of repositioning teeth to recreate smiles and to achieve proper functional occlusion. Conventional orthodontic treatment is a time-extensive process that often requires patients to wear the brackets or aligners for an extended duration of time. However, in recent years, the paradigm of interest has shifted towards the techniques that can accelerate this tooth movement—an innovative approach aimed at expediting the repositioning of teeth while oral health has been maintained properly. This introduction ventures into the concept of accelerated tooth movement, exploring its underlying principles, methods, potential benefits, and considerations within this realm of orthodontics.

Abstract 64

Tomographic evaluation of transverse compensation of posterior teeth in different skeletal pattern

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Objectives: To evaluate the buccolingual inclination and cortical bone thickness of posterior teeth in different malocclusions and to analyze the relationship between the two using CBCT.

Material and methods: The study was conducted on the previously taken CBCT records of 60 selected untreated adult male and female

subjects in the age range of 18–65 years. They were divided into three sagittal skeletal patterns (Class I: $n = 23$, Class II: $n = 23$, and Class III: $n = 14$), and buccolingual tooth inclination was measured using the long axis of teeth, and the floor, cortical bone thickness at buccal, lingual/palatal, and basal regions on maxillary and mandibular second premolars (PM2) and first molars (M1) were measured.

Results: Mean + SD were calculated for each parameter. For maxillary and mandibular, the buccolingual inclination of PM2 was higher in skeletal class I and lower in class II, and for M1, it was higher in skeletal class III and lower in class II. However, some variations are seen on the right and left sides. Thinner cortical bone was present in skeletal class III than in class I and class II particularly buccal cortical bone.

Conclusion: The discrepancy in sagittal skeletal pattern affects the buccolingual inclination of M1, particularly in subjects with skeletal class III, which shows higher values than class I and class II, representing greater dental compensation of skeletal pattern along with right and left variation at some sides.

Keywords: Buccolingual inclination, Transverse, Compensation, CBCT

Abstract 65

A revolutionary evolution in better clinical decision making in the era of AI

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Aim: The objective of this study is to prepare an artificial intelligence decision-making model for the determination of extraction vs non-extraction cases using machine learning algorithms.

Methods: A retrospective study was carried out on 400 patients whose lateral cephalograms and study models were recruited from the department of orthodontics and dentofacial orthopedics. From this sample, 300 subjects were assigned to the learning set, and 100 subjects were assigned to the test set. The test set was used only for the evaluation of the models.

The models were prepared using three supervised machine learning classifier algorithms: SVM (polynomial and linear), XGBOOST, KNN for decision-making of extraction versus non-extraction cases.

Exclusion criteria	Inclusion criteria
• Patient with congenital anomalies • Patient with spaced dentition • Syndromic patients • Growing patient • Partial anodontia patient • Presence of pathologic diseases	Patients with • Age (13–35 years) • Crowding greater than 5 mm • Proclination of upper, lower anteriors • Full permanent dentition • Increased overjet • Increased overbite

Results: The result of the study suggested the performance rate of SVM polynomial was 0.884 and for linear was 0.975, XGBOOST was 0.971, KNN was 0.965. Of the three algorithms, the performance of SVM linear is highest, followed by XGBOOST, KNN, SVM polynomial.

Conclusion: From the above three algorithms, it can be concluded that SVM polynomial can be used in orthodontic treatment planning and better clinical decision-making of extraction and non-extraction cases followed by XGBOOST, KNN, SVM polynomial.

Keywords: Artificial intelligence, Extraction, Non-extraction, Clinical diagnosis, Clinical decision

Abstract 66

Effect of surface characteristics on *Streptococcus mutans* adhesion on nickel titanium and coaxial stainless steel archwires: A comparative prospective study

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Introduction and background: The insertion of orthodontic wire tends to create new surfaces available for plaque formation and, therefore, increases the level of microorganisms in the oral cavity. Organic acids produced by mutans streptococci cause enamel demineralization.

Therefore, the purpose of this *in-vivo* study was to compare the adhesion of *Streptococcus mutans* to the surface of nickel titanium (NiTi) and coaxial stainless steel (SS) archwires and to correlate the adhesion to surface characteristics (surface free energy and surface roughness) of these wires.

Material and methods: 10 patients who were to undergo routine orthodontic treatment were screened as per the inclusion and exclusion criteria, and 0.016" NiTi and 0.0155" coaxial SS were placed on random allocation. The surface roughness and surface free energy of the wires were analyzed using a profilometer and a goniometer, respectively. Comparisons of *S. mutans* adhesion were done by Mann–Whitney test, and the surface roughness and surface free energy were compared by the independent Student's *t*-test and Student's paired *t*-test. Spearman correlation test was done to compare the *S. mutans* adhesion to the surface characteristics of the wires.

Results: The *S. mutans* adhesion was higher in the coaxial SS wire group when compared to NiTi, and the difference was statistically significant. The surface roughness and surface free energy of the wires increased after 28 days of intraoral exposure. NiTi displayed greater surface free energy, whereas coaxial SS displayed greater surface roughness. On correlating the *S. mutans* adhesion to the surface characteristics of the wires, surface roughness showed a positive correlation, and surface free energy showed a negative correlation.

Interpretations and conclusion: The present study concluded that there is a significant difference in the S.mutans adhesion on the different archwires, and the surface roughness of the wires showed a positive correlation to S.mutans adhesion.

Keywords: *S. mutans* adhesion, Surface roughness, Surface free energy, NiTi, Coaxial stainless steel

Abstract 67

Oral health and associated features in post-menopausal women: A comparative study

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Background: Basic research indicates that changes in oral health parameters, altered eating habits, nutritional status, and emotional oscillations are possible consequences of menopause. However, the condition appears to be multi-dimensional. Therefore, we planned a comparative pilot study to evaluate the above parameters in pre- (PrMW) and post-menopausal women (PMW).

Material and methods: Two groups (Group I: PMW & Group II: PrMW) with 30 participants each were provided with a questionnaire. The questionnaire is a collection of validated short-form of tools assessing oral health, taste perception, nutritional status, and anxiety level of the individuals of both groups. The results were then statistically evaluated using parametric and non-parametric tests.

Results: The cross-sectional study indicates no major differences in oral health, taste perception, nutritional, and emotional status between PMW and PrMW. Besides the front tooth lengthening and more loss of natural teeth in PMW, no immediate significant changes were observed among both groups. Groupwise, the cumulative effect impact of oral health, gustatory function, and eating behavior on overall nutritional status and found no significant different between the groups.

Conclusion: Oral health-related changes, taste perception, eating habits, and nutritional status are gradual aging-related processes that may or may not be manifested due to menopause in women. Other confounders also contribute to the overall health of PMW, therefore mere hormonal changes may not entirely influence oral health.

Keywords: DMFT, Eichner Index, Mini Nutritional Assessment (MNA), General Anxiety and Depression-7 (GAD-7), Post-menopausal women

Abstract 68

Application of in-silico computational biology strategies to demonstrate mechanism of oral cancer cell death by natural peptide

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Background: This research work is designed to identify biomolecules from Earthworm Coelomic Fluid (ECF) of Eudrilus Eugeniae (EE) that can inhibit cancer cells from proliferating. The study aims to construct a homology model of the 18 kDa protein from ECF of EE (18-ECFP) with molecular dynamics simulation (MDS) to enable its molecular docking with pro-apoptotic caspase receptors with determination of binding energy scores. The study also evaluates the anti-cancer potential of 18-ECFP on SCC-9 cells in vitro by wet lab techniques.

Material and methods: Following SDS-PAGE and MALDI-TOF/MS-MS sequencing, the 18-kDa protein was subjected to Nano-LCMS-based AA sequencing. Due to the unavailability of 3D structure in the Protein Data Bank (PDB), it had to be modeled via energy-based methods using the Prime module-Schrödinger. The MDS of the protein was analyzed, followed by protein–protein docking (PPD) using Schrödinger 2020 software. The top five poses exhibiting high PIPER scores were subjected to energy calculations. The 18-ECFP was also evaluated by RT-PCR, western blot, and Q-PCR techniques on SCC-9 cells in vitro to further establish its anti-cancer potential.

Results and discussion: The homology model of the 18-ECFP was constructed with Schrödinger software with stable molecular dynamics. PPD demonstrated binding affinity of 18-ECFP with pro-apoptotic genes Caspase-3 and Caspase-8. The MM-GBSA revealed satisfactory binding energy scores. Gene expression studies revealed upregulation of apoptotic genes Caspase-3 and Caspase-8 induced by the 18-ECFP, validating the *in-silico* findings.

Conclusion: This is the first report of a homology model with MDS of an anti-cancer protein from an earthworm source docked to human caspase receptors with determination of binding energy values supported by validation through multiple *in vitro* gene expression techniques. The current study has provided valuable insights pertaining to the molecular structure of the novel anti-cancer protein of ECF. The findings may contribute to the development of naturally available drugs to combat cancer.

Keywords: Anti-cancer protein, Amino acid sequencing, Earthworm Coelomic Fluid, Homology modeling, Protein–protein docking, Polymerase chain reaction

Abstract 69

Revolutioning mask usage: A novel innovation for enhanced convenience

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Background or Introduction: The global concern that originated with COVID-19 in 2020 remains an ongoing source of apprehension with the emergence of different variants affecting one and the other nation. Even after vaccination, personnel protection is still the sole way to keep one safe which requires the personnel hygiene and masks to be worn for long hours. This prolonged wearing of masks results in a panorama of problems, starting from personal safety to health hazards. So, to overcome the issues associated with the wearing of masks with elastic cords, a new technique was proposed to enhance the compliance of masks along with ease of wearing and preventing cross-contamination by avoiding touching masks and cords repeatedly.

Material and methods: A 23 gauge orthodontic arch wire was used to anchor the mask loops, getting the anchorage from the occipital area of the head.

Results and discussion: The addition of a wire component resulted in better compliance with masks.

Conclusion: This modified mask results in less of irritations and erythematous patches behind the ears, resulting in better compliance along with a reduction in cross-contamination.

Abstract 70

Priority setting and resource allocation methodologies in oral health care

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Objectives: Dental diseases are one of the most expensive diseases to treat globally. Thus, priority setting with the need for adaptive fund allocation is the new norm for optimum financing of oral care. This distribution of funds may vary from country to country as per their identification and clarification of the presence of resources mix. The present study aimed at identifying the various priority setting and resource allocation (PSRA) methodologies in an oral health context.

Methods: A literature search was conducted on MEDLINE, EMBASE, SCOPUS, LILAC, and a limited online gray literature search after the PROSPERO registration. The initial search was performed in July 2023, and there was no limit to the year of publication; however, it started in 2006.

Results: Only nine studies on oral health using various methodologies of PSRA were available. While most of the studies included elements of oral health or disease, very few explicitly acknowledged the core clinical components as the guiding principle for the study. It was analyzed that multiple-level engagements of stakeholders varying from policy makers to field workers were involved. Most of the studies were from high-income groups. The categorization of methodology overlapped (multi-criteria decision analysis, program budgeting marginal analysis, accountability for reasonableness); hence, best buys were compiled.

Conclusion: It was concluded that very few studies have utilized the PSRA methodologies in the context of oral health. Hence, addressing this lacuna is the first step towards improved financing and deliberative priority setting for oral health. These may lead to concrete, actionable, and context-adaptive improvement in oral care financing.

Abstract 71

Artificial intelligence in pediatric dentistry

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Background or Introduction: The cornerstone of maintaining a child's oral health lies in promptly identifying, preventing, and addressing the conditions. Over the past few years, artificial intelligence (AI) has advanced at an astonishing rate, with the ability to execute functions typically reliant on human intelligence. AI has found its way into numerous facets of dentistry, including pediatric dentistry. Nevertheless, there is a dearth of comprehensive records and assessments concerning the existing utilization of AI within the realm of pediatric dentistry.

Material and methods: An extensive search was conducted within electronic databases such as PubMed, Google Scholar, and Cochrane Library from 2000 to 2023. Following the application of appropriate inclusion and exclusion criteria, the articles chosen went for thorough examination and analysis.

Results and discussion: From the articles chosen, it is shown that the AI models have been used to serve as a valuable tool detection of plaque on primary teeth, prediction of children's oral health status and treatment needs, detection, classification, and prediction of dental caries; detection and categorization of fissure sealants; determination of the chronological age; determination of the impact of oral health on adolescent's quality of life; automated detection and charting of teeth and automated detection, and classification of mesiodens and supernumerary teeth in primary or mixed dentition

Conclusion: AI stands as an efficient diagnostic tool with the capacity to aid various facets of pediatric dentistry. Nonetheless, additional research is necessary to evaluate the clinical efficacy of these AI models.

Keywords: Artificial intelligence, Machine learning, Deep learning, Pediatric dentistry, Caries detection

Abstract 72

Prevalence of early childhood caries among pre-school children of Bengaluru city: A cross-sectional survey

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Background: Early childhood caries (ECC) is a public health problem that to date, continues to affect infants and pre-school children worldwide. According to the Global Burden of Disease study in 2017, more than 530 million children globally have dental caries of primary teeth. The prevalence of ECC is increasing rapidly in low- and middle-income countries and varies from population to population; however, children of disadvantaged subpopulations, regardless of race, ethnicity, or culture, have been found to be most vulnerable. According to a systematic review done in India in 2019 is 49.6%. ECC is associated with other health problems, ranging from local pain, infections, and abscesses, leading to difficulty in chewing, malnutrition, gastrointestinal disorders, and difficulty in sleeping. ECC is multifactorial and is often associated with diet and feeding practices. Many preventive strategies have been adopted, but still, the disease burden continues; however, maintaining appropriate oral hygiene practices and periodic check-ups and educating parents about the importance of primary teeth can help in reducing the disease burden.

Aim: The aim of the present study was to evaluate the prevalence of dental caries in children aged 3 to 5 years old in Bengaluru City.

Material and methodology: The study was conducted in five reputed schools in Bengaluru. The study population consisted of 4273 children aged between 3 and 5 years living in Bengaluru, India. A thorough dental examination was carried out using light. The caries status was recorded in the WHO criteria form 2013. The data obtained were then analyzed.

Results: The prevalence of dental caries was 31.4% in the total surveyed population. Individual prevalence is 32.2% of the total 1168 children in DPS East, 29% of the total 422 children in DPS E City,

19.8% of the total 1377 children in DPS South, 41% of the total 1018 children in DPS North, and 30.9% of total 288 children in Harvest International School with a mean value of 1.25, 1.11, 0.85, 1.38, 1.25, respectively.

Discussion: Untreated ECC has multiple consequences as it can lead to problems in eating and phonetics due to early loss of teeth and malocclusion. It ultimately affects learning as it occurs during the years of milestone development of the child. A systematic review and meta-analysis in 2022 indicated that one in every two preschool children in India is suffering from ECC, reflecting its social relevance.

Conclusion: The prevalence of decayed caries among kindergarten children in Bengaluru City was relatively high, suggesting that more emphasis should be put on improving oral health education with priority given to prevention.

Keywords: Early childhood caries, Oral health, Prevalence

Abstract 73

AI powered ChatGPT in dental practice: A meteoric rise

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Introduction: Over the past decade, newer advancements like artificial intelligence and machine learning have emerged as important tools in revolutionizing various sections of engineering as well as healthcare delivery systems. The chat GPT (Chat –Generated Pretrained Transformer) is the latest innovation concerning AI which emerged in the market currently. This technology combines large quantities of data, natural language processing, and neural networks with powerful predictive capabilities. It can be used to generate text, perform language translation, and even interpret images. Recently, various chatbots have been introduced as a new way to improve patient-centered care, basically to improve the quality and efficiency of the delivery of primary healthcare services such as health education and counseling support with minimal human resources.

Conclusion: AI-modulated ChatGPT could produce increased efficiency and streamlined work, there is also growing concern about the impact that these could be generating on the job market with the replacement of humans with machines and also in various sections of education. However, there is still scope for further development by increasing the integration of ChatGPT into word processing programs.

Keywords: Artificial intelligence, Chatbot, ChatGPT, Dentistry

Abstract 74

Microsurgical management of gingival recession using laterally moved coronally advanced flap with amnion membrane: A case report

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Amnion membrane has been used as an allograft in the field of medicine for its exceptional wound-healing properties. However, in the field of dentistry, there are only a limited number of reports which explored its potentiality in healing of oral wounds. In this case report, we used amnion allograft in conjunction with laterally moved coronally advanced flap in the management of gingival recession using a microsurgical approach. A complete coverage along with excellent aesthetics was obtained, and post-operatively, at six months, an improvement in gingival biotype was observed without recurrence of recession. Because of its inherent wound-modulating properties, amnion as an allograft may be used to enhance periodontal wound healing, and using microsurgical techniques helps us in achieving precise manipulation of tissues with less trauma and also enabling precise coaptation of wound edges, thus resulting in healing by the first intention which is essential for tissue regeneration such as that in the coverage of gingival recession.

Conclusion: Amnion as a membrane provides an alternative in the management of shallow-to-moderate Miller's Class I and II gingival recession defects. The self-adherent property of amnion will significantly reduce surgical time and is easier to perform relative to other techniques. The results obtained in the present case report are encouraging and demonstrate that the amnion as an allograft is well tolerated by the gingival tissues, and the use of a microsurgical approach results in proper manipulation of tissues and also plays a pivotal role in healing. Further, more number of studies for exploring the potential of this allograft in periodontal therapies are required. The present case report may be helpful as it paves the way for future research that may investigate its application in other periodontal surgical procedures.

Keywords: Amnion, Gingival biotype, Gingival recession

Abstract 75

Cephalometric parameters for predicting future orthognathic surgery in patients with cleft lip and palate: A systematic review and meta-analysis

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Background: Craniofacial anomalies, such as orofacial clefts, present significant challenges in treatment planning and management. Correcting skeletal malocclusion in repaired cleft lip and palate (CLP) individuals during the mixed or early permanent dentition phase is particularly complex due to various influencing factors. Accurate prediction of the need of orthognathic surgery (OGS) as early as possible, at least during the early mixed dentition stage, can reduce the significant burden of care.

Objective: This study aimed to identify cephalometric parameters that can predict the future need for OGS in repaired CLP patients.

Methods: A comprehensive search was conducted across multiple databases, including PubMed, Scopus, Embase, Web of Science, Cochrane, Ovid Medline, EBSCO, and LILACS, to identify relevant studies. The search was periodically updated until June 2023. Eligible studies were comparative, involving human subjects,

and described their methodology clearly. The participants included CLP patients who either required or had undergone OGS or distraction osteogenesis (DO) at the completion of their growth. The outcome of interest was the identification of cephalometric parameters that could predict the future need for OGS or DO. The methodological quality of each study was assessed using the Quality in Prognostic Studies (QUIPS) tool. Two independent reviewers screened the studies, and studies that met the inclusion criteria were evaluated for risk of bias. A random-effects meta-analysis of various cephalometric parameters was performed.

Results: A total of 11 studies were included in the systematic review, with five eligible for meta-analysis. The assessment of the risk of bias using the QUIPS tool indicated that most studies (n = 7) had a moderate risk of bias, followed by high risk (n = 4). Only two studies demonstrated a low risk of bias. The meta-analysis identified statistically significant mean differences in cephalometric parameters (SNA, SNB, and ANB) between surgical and non-surgical groups across different age categories. Notably, an ANB angle ranging from 1.3 to 1.7 degrees at 5–8 years and an ANB angle of -4 to -2 degrees at 9–11 years were identified as potential indicators for the future need for OGS.

Conclusion: Cephalometric parameters hold promise as valuable predictive factors for determining the future need for OGS in repaired CLP patients. However, further research is required to explore reliable parameters specifically relevant to operated cleft patients. A prediction model based on such parameters could aid in early and informed decision-making, optimizing treatment planning and improving patient outcomes for individuals with orofacial clefts.

Abstract 76

Efficacy of various treatment modalities in management of trigeminal neuralgia: A randomized control clinical trial

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Introduction: Trigeminal neuralgia (TN) is the most common neuralgia of the head and neck region and is a major cause of orofacial pain, and is common among the middle aged and the elderly after the age of 50 years. Since TN is severely painful, accurate diagnosis and prompt treatment are of utmost importance.

Material and methods: This was a prospective, single-center, randomized controlled clinical trial conducted on 75 patients who reported in the Department of Oral Medicine and Radiology of Maulana Azad Institute of Dental Sciences. Patients were divided into five groups of 15, each for carbamazepine (used as gold standard), lamotrigine, pregabalin, duloxetine, and gabapentin. Patients were evaluated clinically and data were recorded pertaining to the branch of trigeminal nerve involved, trigger points, frequency of pain, and severity of pain using a visual analog scale.

Results: There was a statistically significant reduction in VAS score as well as facial pain score in the gabapentin group when compared to pregabalin, lamotrigine, and duloxetine group. The results of pregabalin and lamotrigine groups were comparable. However, none of them was superior to the carbamazepine group. There were no serious adverse effects in either of the treatment groups. Common adverse effects in carbamazepine and gabapentin groups were drowsiness and dizziness, which were not significant in other groups.

Conclusion: Carbamazepine is considered as the gold-standard first-line treatment for TN. Gabapentin has been used in randomized control trials of neuropathic pain and was proven effective. Both lamotrigine and pregabalin have been extensively reviewed in the past for the management of painful neuropathic conditions, with only a few establishing their efficacy in TN. The present study suggested that gabapentin can be effective as a first- or second-line treatment modality in cases resistant to carbamazepine. Pregabalin and lamotrigine can be used as an adjuvant to carbamazepine and gabapentin drug.

Keywords: Trigeminal neuralgia, Carbamazepine, Gabapentin, Lamotrigine, Treatment modalities

Abstract 77

Health professions education through the lens of National Education Policy 2020

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Over the past three years of the new National Education Policy (NEP), many have been convinced that the policy has nothing to do anything with health professions education since they are under their own regulatory bodies. The academic administrators would have attended a big arena of events, discussions, and debates related to NEP particularly to face the accreditations and the directions to move ahead. This short presentation would throw some clarity on how health professions education is already covered under the NEP in many sectors.

Abstract 78

Cone beam computed tomography evaluation of enlargement of pharyngeal airway space by AdvanSync 2 appliance

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Introduction: AdvanSync 2 is a molar-to-molar fixed functional appliance that is used to advance the mandible in Class II skeletal pattern. Mandibular advancement has been correlated with pharyngeal airway enlargement and an increase in airway patency.

Objective: To compare the pharyngeal airway cross-sectional area, total airway volume, and pharyngeal length before (T1) and after (T2) treatment with AdvanSync 2 appliance using CBCT.

Material and methods: CBCT of 10 subjects (15–22 years) were taken before (T1) and after (T2) treatment with AdvanSync 2 appliance. The scans were performed on i-CAT Classic CBCT scanner, and the DICOM data were analyzed on Invivo 5.2.4. The pharyngeal airway cross-sectional area was measured in four planes viz, palatal, soft palatal, base of epiglottis, and C4 plane. Total airway volume and pharyngeal length were measured from the roof of the nasopharynx to C4 plane and PNS to the upper margin of the hyoid, respectively.

Results: There was a statistically significant increase in the cross-sectional area at the palatal plane, soft palatal plane, and base of the

epiglottis plane (0.002, 0.034, and 0.009, respectively) and a statistically significant increase in the total airway volume (0.028).

Discussion and conclusion: Rizka *et al* conducted a study with MARA appliance and demonstrated a statistically significant increase in the oropharyngeal airway volume and dimension. The AdvanSync 2 appliance increases the pharyngeal airway at the palatal plane, soft palatal plane, and base of the epiglottis plane, along with the total airway volume.

Keywords: Pharyngeal airway, CBCT, Advansync 2 appliance

Abstract 79

Immunophenotypic evaluation of tumor budding and epithelial–mesenchymal transition in the early detection of metastasis of oral squamous cell carcinoma using MATLAB software

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Background: Oral cancer accounts for 20%–30% of all cancers in India. The major difficulty in managing carcinomas is due to failure in the detection of metastases. Tumor spread by invasion is facilitated by epithelial–mesenchymal transition (EMT) that involves acquiring a mesenchyme-like phenotype by the epithelial cells. Various EMT biomarkers are used for the prediction and early detection of metastasis. Prompt prediction of metastasis in oral squamous cell carcinoma (OSCC) would navigate the surgeon by avoiding unwanted treatment of low-risk patients and toward aggressive therapy of high-risk patients. Recently, the use of computer-assisted quantification methods employing image processing is drawing attention, wherein information can be automatically extracted from the immunostained digitized images. Such methods are objective, reproducible, and reliable, save human labor, and are of high quality.

Aim: To assess the metastatic risk of OSCC by the quantification of protein expression of EMT biomarkers using MATLAB software.

Objectives: To evaluate pan CK-stained tumor buds and the expression of EMT biomarkers: E-cadherin, 13-catenin, MMP-2, and MMP-9 using immunohistochemistry. To quantify tumor buds and the protein expression of E-cadherin, 13-catenin, MMP-2, and MMP-9 biomarkers using MATLAB software.

Methodology: Pan CK-stained tumor buds and E-cadherin, 13-catenin, MMP-2, and MMP-9 expression were evaluated immunohistochemically on 40 archival tissue samples of OSCC that included 20 samples each of metastatic and non-metastatic groups. Photomicrographs of immunostained OSCC cases were captured and subjected to texture and color segmentation using image processing in MATLAB software.

Statistical analysis: Statistical analysis using Statistical Package for the Social Sciences (SPSS) software was done. The mean score of protein expression of EMT biomarkers was analyzed using Pearson's chi-squared test.

Results: Metastatic OSCC showed a significantly high number of tumor buds (90%) as compared to non-metastatic which was significant. There was a significant decrease in the proportion and intensity of positive cells in E-cadherin and an increase in MMP9 protein expression in metastatic OSCC ($p = 0.00$). A significant decrease was found only in the proportion of 13-catenin ($p = 0.00$), whereas membranous intensity and cytoplasmic proportion and intensity did not reveal significance statistically. There was a significant increase in the proportion of tumor and stromal cells and intensity of tumor cells obtained by quantification of MMP2 protein expression using image processing ($p = 0.00$).

Conclusion: This study is the first of its kind wherein image processing using texture and color segmentation in MATLAB (objective tool) has been used effectively to quantify the phenotypic protein expression of immunostained sections of tumor buds and EMT markers of OSCC. The correlation of tumor buds with protein expression of EMT markers supports the mechanism of EMT phenomenon responsible for metastasis of OSCC thereby facilitating the surgeons to arrive at a definitive treatment plan.

Keywords: Epithelial–mesenchymal transition, MATLAB, Metastasis, Oral squamous cell carcinoma, Tumor buds

Abstract 80

Correlation of the mandibular third molar and mandibular fractures

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Introduction: The third molar extraction is a very common procedure performed by maxillofacial surgeons, having said that, there are some situations in which the maxillofacial surgeon faces a dilemma about the extraction of mandibular third molars. In a quest to evaluate the risks versus benefits and to establish a standard protocol for third molar extraction, baseline data needs to be generated, so we have planned an observational study to find out the relation of mandibular third molar with mandibular fractures.

Methods: A hundred patients with mandible fractures were selected randomly, irrespective of age, sex, caste, creed, and socio-economic status. Data were collected from the patients on the basis of history, clinical examination, and radiographs for the following information: age, sex, etiology of fracture, presence and status of the mandibular third molar, and location of mandible fracture.

Results: In group A (partially/completely unerupted mandibular third molar), the incidence of angle and condylar fracture were 44.44% and 13.33%, respectively, whereas in group B (fully erupted/missing mandibular third molar), the incidence of angle fracture was 14.45% and the incidence of condylar fractures were 31.77%.

Conclusion: The practice of prophylactic removal of the mandibular third molar and resultant strengthening of the angle region should be reconsidered, as it increases the risk of fracture at the condylar region, which is difficult to treat and associated with more morbidity.

Abstract 81

Effectiveness of *Moringa oleifera* mouthwash in young adults as an antiplaque agent

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Background: Herbal mouthwash use has increased dramatically over the years. Several drugs have been tested, based on phytopharmacological study and they have proved to be effective for oral health conditions. *Moringa oleifera* (MO) is one such agent that has been employed in the past. A novel *M. oleifera*-based mouthwash has demonstrated promising biocompatibility and anti-inflammatory activity. As a result, the current study intends to compare the performance of two commercially available chlorhexidine and moringa-based herbal mouthwashes on plaque reduction.

Methodology: This randomized clinical crossover study included 25 individuals with more than one plaque score. The study was conducted over a total examination period of 2 months with a washout period of 2 weeks between the use of both mouthwashes. The Quigley Hein plaque index of the study subjects was recorded at the designated baseline and after 28 days of use throughout the study period.

Statistical analysis: The data collected were entered into Microsoft Excel, and statistical analysis using SPSS software (SPSS v. 16, IBM Corp, Armonk, New York) was done. The statistical test used was the Wilcoxon signed-rank test, and the level of significance was considered to be 0.05.

Results: The results showed that the reduction in mean index scores from baseline to day 28 was statistically significant in the moringa-based mouthwash. Similarly, the plaque index scores showed a statistically significant reduction following the use of the moringa-based mouthwash when compared with the gold-standard chlorhexidine mouthwash with a *p*-value of 0.00. The comparison showed that MO offered the same improvement in the evaluation of plaque index. The participants treated with MO showed PI decreased from 0.7 to 0.3, and for the CHX group, the reduction was seen to be from 0.6 to 0.3. This study reveals that the moringa dentifrice is a safe and effective agent in reducing plaque accumulation.

Conclusion: The current study aims to provide insight into the possible role of *M. oleifera* mouthwash as a possible adjunct for oral hygiene aid.

Keywords: *Moringa oleifera*, Chlorhexidine mouthwash, Dental plaque, Herbal dentifrice

Abstract 82

Emotional intelligence assessment among various faculties of Ramaiah University

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Introduction: "We are not just smart by our training and expertise, but by how well we handle ourselves and each other," a thought rightly stated by Sir Daniel Goleman. For long, emotional intelligence (EI) was considered just a notion of experiencing and expressing emotions as a domain of intelligence but it is more than just that. Self-appraisal is necessitated in the service industry as there is a high amount of interaction with customers. Hence, health professionals need to effectively generate emotions in order to create a service environment that is positively driven and that contributes to better customer satisfaction and future loyalty. This study was therefore taken up to assess and compare the EI among various students undergoing different professional courses in Ramaiah University to help understand the various factors affecting their professional behavior which influences their outcome.

Material and methods: A cross-sectional study was conducted among 420 students (sample size as per Schutte 1998-Cronbach's Alpha of 0.90, i.e., significant)) from the faculties of dental and allied health social sciences to assess their levels of EI. The Schutte Self-Report Emotional Intelligence Test (SSEIT) questionnaire was used as the validated tool (pre-study conducted) for data collection. The study participants were asked to rate depending upon the extent they agreed or disagreed with a given question on a 5-point Likert scale. The data was documented in an MS Excel spreadsheet and later analyzed using SPSS 20.0 v. software. A comparative analysis carried out determined the difference in the level of EI among the study groups.

Results: The study was conducted among 422 students. In total, 119 (28.18%) males and 303 (71.80%) females participated in the study. Kolmonogrov–Smirnov normality test showed $p < 0.001$, which is highly significant. Further comparative analysis showed the minimum–maximum EI for dental, social science, and allied science to be (84–153, 42–97, 66–109, with mean of 119.29 SD ± 13.31, 91 SD ± 11.41, 83, 83 SD ± 8.52), respectively. The overall EI among the study participants was low EI-29.8%, average EI-61.13%, and high EI-9%, which is rather significant owing to the difference.

Discussion: As seen in our study, the measure could be used to assist students/professionals who are at risk of performing poorly. Individuals can benefit from additional guidance, training, or assistance, thereby improving their outcomes.

Keywords: Emotional intelligence, Social intelligence, SSEIT, Students

Abstract 83

Oral cancer cell culture challenges: Exploring remedial approaches

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Background and Introduction: Contamination is a major obstacle, particularly in the context of oral cell lines, owing to the complex oral microbiome. This study seeks to achieve the isolation of pure cell lines derived from oral cancer tissues with the aim of troubleshooting contamination obstacles. The primary objective of this study is to identify microbial impurities and customize a sterilization procedure exclusive to the cultivation of oral cancer cell lines.

Material and methods: Biopsied tissues from oral squamous cell carcinoma (OSCC) patients were subjected to cell culture in a medium consisting of DMEM: F12 with 10% FBS, supplemented with growth factors, insulin, and antibiotics. To assess and address potential microbial contamination, cultures were established on YEPD agar plates supplemented with ampicillin and nutrient agar plates, and these were then incubated at 27°C for a period of 3 days. Genomic sequencing techniques, specifically targeting the 16S and 18S rRNA, were employed to identify any microbial organisms present. An antimicrobial regime comprising of gentamicin and amoxicillin with established sterile culture standards will be analyzed further to check for contamination management in OSCC cell lines.

Results and discussion: Common contaminants included *Streptococcus gallolyticus, Streptococcus pasturiaun, Streptococcus macedonicous*, and *Candida albicans*. Cobo *et al.* (2007) identified mycoplasma as a common contaminant, while Rajendran *et al.* (2013) faced high microbial and fungal loads in SHED cell cultures. Larrea *et al.* (2007) discovered coagulase-negative staphylococcus contamination, and Niehues *et al.* (2020) encountered human adenovirus C and *Brevibacillus brevis*. Mirjalili *et al.* (2005) emphasized mycoplasma as a significant concern. Shekhar and Rangnathan (2012) noted Gram-negative cocci causing human mesenchymal stem cell culture loss.

Conclusion: Developing a highly reliable and meticulously designed methodology is strongly recommended to guarantee the absence of contaminants in oral cancer cell lines. Thoroughly planned and executed protocol will not only enhance the integrity of the cell lines but also contribute significantly to the advancement of tailored medical treatments and therapies for oral cancer patients.

Keywords: Antimicrobial regimen, Microbial contaminants, Oral cancer cell lines

Abstract 84

Detection of cervical lymph node micrometastasis: A machine learning based approach

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Background: Oral malignancy rates have been on the rise globally due to a lack of healthcare facilities, unaffordable treatment expenses, and diagnosis at the advanced stages. The presence of cervical lymph node metastasis stands out as a highly consequential prognostic factor in the context of oral cancer patients. Micrometastatic deposits represent a crucial factor that not only influences the clinical staging of patients but also has a substantial impact on the choices made regarding their treatment. For the detection of micrometastasis, pathologists may face the demand of scrutinizing a significant quantity of lymph node slides, often requiring the incorporation of supplementary immunohistochemical staining alongside the conventional hematoxylin and eosin staining process. However, the manual microscopic examination of lymph nodes by pathologists to detect micrometastatic deposits is a laborious, time-intensive, and subject-to-error procedure. The utilization of machine learning (ML) on photomicrographs of lymph node sections eliminates the limitation of manual technique and offers the opportunity to employ it for the automated detection of metastatic tissue.

Aim: To detect micrometastasis in lymph node sections of oral squamous cell carcinoma (OSCC) using ML technique.

Material and methods: 50 lymph node archival tissue sections stained with Papanicolaou stain were considered of which 25 nodes each were metastatic and non-metastatic cases. Ten images were captured from each slide, accounting for 500 images. These images were stored in.jpeg file format. These were analyzed using ML tool to classify the nodes into metastatic and non-metastatic cases.

Results and discussion: ML-based method is found to be superior compared to conventional technique in the detection of lymph node micrometastasis.

Conclusion: Earlier detection of micrometastasis in cervical lymph nodes is efficient in upstaging the primary tumor and thus affects the treatment and prognosis of patients with OSCC. This technique is justified for improved diagnosis and treatment planning of clinically node-negative OSCC patients.

Keywords: Oral squamous cell carcinoma, Micrometastasis, Machine learning, Lymph node

Abstract 85

Management of complex dentofacial asymmetries in adults using artificial intelligence, digital diagnostics and rapid prototyping: A case report

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Introduction: Facial asymmetry is the difference in shape, size, position, or function between the two sides of the face. Mild degrees of facial asymmetry are common in the human population and are accepted as the natural result of normal growth and development. However, moderate to severe facial asymmetry can lead to negative impacts in terms of oral functions, facial attractiveness, and psychosocial well-being. The diagnosis and management of asymmetries pose a particular clinical challenge as they often involve all three dimensions and also worsen over time. Effective management of these complex deformities requires an intuitive approach to harness digital diagnostics, advanced artificial intelligence, and innovative rapid prototyping. The aim of the present paper is to showcase the blend of virtual and clinical strategies for the diagnosis and management of two adult males with complex facial asymmetries.

Methods: The application and advantages of these techniques are as follows: (A) Diagnostics - The use of 3D CT/CBCT has overcome the limitations of 2D diagnostic aids. Currently, several strategies are being devised to utilize the stereolithographic data to accurately pinpoint the causality and complexity of facial asymmetries. The degree of deformity is measured accurately before suggesting the optimal treatment plan. The 3D records also allow us to produce models made of biodegradable cellulose to accurately evaluate the deformity without the veil of soft tissues. (B) Patient education and mock surgery - The 3D models enable the patients to visualize the treatment outcome virtually, eliminating their anxiety regarding the post-surgical results and allowing surgeons to perform mock surgeries. (C) Management - Virtual surgical planning - The embodiment of artificial intelligence in virtual surgical planning

has enabled us to accurately plan, predict, and execute complex orthognathic and orthomorphic surgical procedures. 3D Splint - The use of rapid prototyping has enabled the production of 3D splints to carry the data from the virtual set up onto the surgical table. Therefore enabling greater accuracy and successful surgical outcomes.

Results and discussion: This case report of two adult males with gross facial asymmetry diagnosed and managed using these techniques will be presented, highlighting the role of digital technology to harmonize facial deformities with maximum accuracy and stability.

Conclusion: The use of state-of-the-art 3D diagnostic aids and AI-assisted virtual surgical planning with rapid prototyping for splint fabrication is a useful aid in the management of complex dentofacial deformities.

Keyword: Artificial intelligence, Facial asymmetry, Orthognathic surgery, Asymmetric BSSO

Abstract 86

Automated micronuclei detection in exfoliated oral epithelial cells of smokers using MATLAB software

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Background: The detection of micronuclei yields an excellent path to monitor individuals or populations exposed to mutagenic, genotoxic, or teratogenic events. Micronuclei are small nucleic structures formed due to the deposition of nuclear envelopes around lagging chromosomes that persist in the interphase. Hence, micronuclei detection in exfoliated oral epithelial cells of smokers is a significant biomarker for genotoxicity and to identify cellular changes of biological importance to carcinogenesis. While studies have been conducted for the detection of micronuclei in smokers, they may easily be missed in regular histopathological sections when viewed under the microscope. Automation of micronuclei detection can prove to be a relatively convenient, accurate, and time-efficient process. An image analyzing software, MATLAB, is a more refined and precise tool used in recent times for image analysis. This study aimed at employing MATLAB for micronuclei detection in exfoliated cells of smokers.

Material and methods: This study was conducted by obtaining oral tissue samples from chronic smokers via exfoliative cytology with informed consent. The samples were then stained with hematoxylin and eosin stain, followed by manual analysis. The histopathological specimens were further scanned under the research microscope with an attached CCD camera, and images were obtained in.jpeg format. These images were then analyzed using image processing in MATLAB 2016 Ra 9.0 software with an integrated image processing toolkit (Mathworks, Natick, MA) for micronuclei detection.

Results and discussion: Automated micronuclei detection in exfoliated oral epithelial cells of smokers using MATLAB software was more accurate, time-efficient, convenient, and reproducible when compared to manual analysis. The software also detected micronuclei that were initially missed during manual analysis. Micronuclei assay is a reliable biomarker in carcinogenesis, the detection of which can aid in detecting chromosome destruction, mutagenesis, and, therefore, disease progression. In this study, automated micronuclei detection was found to be better than manual means.

Conclusion: MATLAB software is a useful tool to detect micronuclei in exfoliated oral epithelial cells of smokers and a reliable aid to screen patients at high risk for developing potentially premalignant/malignant lesions.

Keyword: Micronuclei, MATLAB software, Smokers

Abstract 87

Convolutional neural network: An aid to diagnose bacterial and fungal osteomyelitis

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Background: Osteomyelitis may be classified as bacterial (actinomycotic), fungal (mucormycotic), or combined based on the etiological agent. During histopathological examination, there are high chances that bacterial colonies or fungal hyphae may be missed by the human eye, especially when there is a paucity of organisms. This may lead to a faulty diagnosis of the type of osteomyelitis, which, along with an improper treatment plan, would cause further progression of the disease and various other complications. Therefore, the diagnosis of the exact etiological variant of osteomyelitis is of prime importance in designing an appropriate treatment plan. In the present study, bone parameters based on the osseous changes were used to diagnose osteomyelitis by employing machine learning through convolutional neural networks (CNNs). No studies in the literature have utilized a CNN-based analysis to differentiate between bacterial and fungal osteomyelitis based on the osseous changes, which would help in designing an appropriate treatment plan.

Material and methods: Histopathologically confirmed cases of osteomyelitis were stained with modified Gallego's stain, a differential stain for hard tissue structures. A total of 10 slides of each of the 3 study groups were used and ten images were captured from each slide. The slides were analyzed for the bone parameters of osteocytic lacunae, osteoblastic rimming, bone area, bone outline, and necrosis. The bone parameters assessed were then compared between the three study groups, i.e., bacterial, fungal, and combined osteomyelitis. CNN was used to train the software for the bone parameters to differentiate between the three study groups.

Results and discussion: The bone parameters showed significant differences between actinomycotic and mucormycotic osteomyelitis. The trained machine was able to assess and differentiate between the bone parameters of the given samples with a high level of accuracy, which was useful in diagnosing the type of osteomyelitis.

Conclusion: CNN-based analysis successfully helped us to differentiate between bacterial and fungal osteomyelitis based on the bone parameters thereby assisting pathologists in accurate diagnosis and facilitating the clinician to provide a definitive treatment plan.

Keyword: Actinomycosis, Convolutional neural network, Mucormycosis, Osteomyelitis

Abstract 88

Sequential analysis of lesion in dental radiographic images using AT

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Background: Periapical lesions are normally the expression of apical periodontitis in dentistry. Conventionally, these lesions were manually evaluated by radiographs, which can be a time-consuming process. With the advancements in artificial intelligence, deep learning (DL) has evolved and perfected with time, primarily over one particular algorithm — a Convolutional Neural Network (ConvNet/CNN). CNN is a DL algorithm that can take in an input image, assign importance to various aspects/objects in the image, and differentiate one from the other. This paper aims to use and compare the two dental lesion healing prediction models, namely YOLACT and DeeplabV3 for the prediction of duration required for the healing process.

Material and methods: The sample size of this study was 150. This study identifies lesions by leveraging deep neural networks by using the manually collected, annotated, and augmented dataset of dental lesions. The data have been acquired and the analyses of the software developed in collaboration with the engineering department were used. YOLACT and DeepLabV3 were the two models used to compare the predictions of the lesion where state-of-the-art models were used, and new training samples were created from the existing data through augmentations.

Results and discussion: YOLACT performs better than DeepLabV3 in assessing the healing of dental lesions. YOLACT (Real-time instance segmentation, ICCV 2019) attempts real-time instance segmentation by instance segmentation into two parallel tasks, generating a set of prototype masks and predicting per instance mask coefficients. DeepLabV3 is a semantic segmentation architecture that belongs to the DeepLab series. Although fully convolutional neural networks (FCN) are used for segmentation, it can cause loss of information where object boundaries are fuzzy.

Conclusion: This study shows the potential for using CNN in periapical lesion detection and effective analysis of different stages of healing. The pre-trained CNN model yielded in this study can be used for further training on larger samples and/or clinical radiographs. It was seen that Yolact performs better than DeepLab models. This software makes it convenient for dentists to interpret the prognosis of dental lesions.

Keywords: Artificial intelligence, Deep neural network, Periapical lesions

Abstract 89

Convolutional neural network-based machine learning for ameloglyphics: A forensic analysis

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Background: Toothprints, considered to be the hard tissue analogs of fingerprints, have been studied extensively over the years by manual and, in some cases, digital methods. While artificial intelligence (AI) and machine learning (ML) have witnessed a steady rise in their applications in various fields with promising results, their utility in ameloglyphics has not been tried and tested.

This study employed ML through a convolutional neural network (CNN) to analyze enamel prints. The aim of this study was to analyze toothprints through CNN-based technology and correlate the patterns with gender and age.

Material and methods: The study was done on a sample size of 60 extracted deciduous teeth and 60 extracted permanent teeth. The surface of the teeth was acid etched, and the enamel prints were taken by means of cellulose acetate strips. The obtained prints were photographed, subjected to manual analysis, and classified based on the patterns described by Manjunath *et al.* in 2011. CNN was then used for training and testing the datasets.

Results and discussion: CNN was successfully trained and tested for its ability to identify and differentiate ameloglyphic patterns. Significant differences were observed between the enamel prints of the two genders and between the analyzed age groups.

Ameloglyphic patterns, being unique to individuals, act as aids in personal identification and hold immense value in mass disaster situations where soft tissues being friable are seldom preserved. Enamel, being highly resilient and resistant to various degrading actions such as heat and acid, can be a crucial tool for human identification in such circumstances. AI and ML-based CNN for the analysis of these enamel prints can simplify and potentially replace conventional methods.

Conclusion: Ameloglyphics for personal identification is a significant forensic tool. Ameloglyphic analysis via CNN-based ML was found to be accurate, cost-effective, and time-efficient. The analysis of tooth prints by manual means can be a cumbersome process and the incorporation of AI and ML for the same, as observed in this study, can overcome this drawback. Hence, CNN for ameloglyphic analysis is a reliable tool.

Keywords: Ameloglyphics, Convolutional neural network, Forensic odontology, Machine learning

Abstract 90

Influence of diabetes on the progression of ulcerative colitis (UC) to colitis associated colorectal cancer (CACC): Role of PARP-1 inhibitors

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Ulcerative colitis is a prototypical multifactorial, non-specific complex disease characterized by persistent chronic and heterogenous manifestations. It is influenced by a complex interplay of environmental, genomic, microbial, and immunological factors, and its incidence has increased worldwide. Colitis-related colorectal cancer is one of the devastating and life-threatening complications of long-term ulcerative colitis and is associated with substantial morbidity and mortality. Diabetes mellitus is one of the most

frequent comorbidities with ulcerative colitis and colitis-associated colorectal cancer, having epidemiological, pathogenetic, clinical, and therapeutic implications. Both colitis and diabetes have been associated with chronic inflammation, intestinal barrier disruption, alterations in microbial balance, and DNA damage, leading to genetic mutations and potentially contributing to an accelerated progression to colitis associated colorectal cancer development. The exact molecular mechanisms by which colitis and diabetes interact to potentially accelerate colorectal cancer development were not fully understood. It has been reported that PARP-1 inhibitors showed promising anti-inflammatory and anti-cancer activity in a number of pre-clinical and clinical studies. The aim of the present study is to identify the potential molecular mechanisms and the therapeutic role of 3-amino benzamide against the colitis-associated diabetes in progressive colorectal cancer conditions. Male BALB/c mice was administered azoxymethane (AOM; 10 mg/kg; i.p.) and Dextran sulphate sodium (DSS; 3% w/v) for tumor development. Further, to investigate the influence of diabetes mellitus on colon inflammation, Streptozotocin (40 mg/kg; i.p.) for five consecutive days were administered at the first recovery period. 3-aminobenzamide (3-AB) was administered at the doses of (5 mg/kg; 10 mg/kg; i.p.) as the intervention starting from the second DSS cycle and continued till the end of the study. 3-aminobenzamide (3-AB) significantly ameliorated the severity of colitis-associated diabetes mellitus by modulating the expression of various molecular targets sirtuin 1 (SIRT 1), insulin growth factor 1 (IGF-1), proliferating cell nuclear antigen (PCNA), poly[ADP-ribose] polymerase 1(PARP1), nuclear factor kappa-light-chain-enhancer of activated B cells (NFkBp65), NLR family pyrin domain containing 3 (NLRP3), cysteine protease-1 (Caspase-1), interleukin-1β, interleukin-10, and βcatenin. There was an increased occurrence of disease activity index along with high tumor multiplicity, the appearance of methylene blue stained aberrant crypt foci, histopathological, immunohistochemical, and western blot analysis revealed that DSS-induced chronic inflammatory microenvironment favored tumorigenesis in the colon leading to the progression of colitis-associated colorectal cancer with time. Further, 3-AB treatment showed protective effects against the progression of colitis-associated colorectal cancer by modulating the PARP-1-NLRP3 inflammasome and autophagy-related signaling pathways. The present findings identify the underlying mechanisms involved in the pathogenesis of colitis-associated colorectal cancer, and the pathology of diabetes exacerbated the process; further intervention of 3-AB ameliorated the same in the experimental mice model.

NURSING

Abstract 91

Prevalence of malnutrition among children under 5 years of age

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Introduction: Adequate nutrition is a fundamental human right, especially critical for a child's physical and cognitive development. However, in India, malnutrition among children has persisted as a longstanding critical issue. Despite significant economic growth in the country, malnutrition remains a major public health concern, taking various forms such as undernutrition (stunting, wasting, and underweight), micronutrient deficiencies, and even overweight or obesity. According to the National Health and Family Survey-5 report (2019–2021), alarming statistics reveal the extent of the problem among children under five years of age: 30% are stunted, 18.5% are wasted, 7.6% are severely wasted, and 27.3% are underweight. Additionally, 4.2% are overweight. These statistics highlight the multifaceted nature of the nutritional challenges faced by India's children. Children are particularly vulnerable to malnutrition due to their increased nutrient requirements for growth and development. Malnourished children not only experience immediate health issues but also face the risk of long-term developmental delays. These delays can impact their ability to learn, engage in society, and ultimately contribute to the economy as adults. Therefore, understanding the prevalence of undernutrition among young children is essential to identify those at risk of health problems and to guide targeted interventions and policies.

Objectives:

1. To assess the prevalence of malnutrition among children under 5 years of age.
2. To explore the association between undernutrition and sociodemographic variables.

Material and methods: A community-based cross-sectional study was conducted in the field practice area of Bettahalsur Primary Health Center in Bangalore. Five villages under Bettahalsur PHC were randomly selected, and 210 children under five years of age were chosen using a convenience sampling technique. Data were collected through structured questionnaires through house-to-house surveys, with interviews conducted with the mothers of children under five, and anthropometric assessments of these children were performed following WHO criteria. Data were entered into an Excel spreadsheet and analyzed using SPSS v. 20.

Results and discussion: Among the total study participants, the prevalence of underweight was 16.7%, among which 6.2% were severely underweight. Additionally, 31.9% were stunted, with 15.2% being severely stunted, and 21.9% were wasted, among which 10% were severely wasted. Age, gender, and socioeconomic status were found to have a significant association with undernutrition.

Conclusion: The research unveiled that the prevalence of undernutrition among children under five years of age was quite high and also showed disparities in nutritional status among different socioeconomic groups, ages, and genders. This information can serve as a compass, guiding targeted interventions and allocation of resources toward vulnerable populations and reducing health inequalities. Ultimately, it helps in achieving the sustainable developmental goal (SDG)-2 which focuses on zero hunger by 2030.

Keywords: Malnutrition, Under-5 children, Prevalence, Sociodemographic, Undernutrition

Abstract 92

Competency-based teacher education (CBTE): A training module to improve knowledge, attitude, and practices (KAP) of school teachers on learning disabilities in children

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Introduction: Inclusive education is a new approach towards a system of educating children with disabilities and learning difficulties with that of normal ones within the same crown. Competency-based teacher education (CBTE) is a framework in which teachers demonstrate their learned knowledge, attitude, and skills in order to achieve specific predetermined 'competencies' for a specific course or at a specific educational institution. Children with learning disabilities have significant impairments in reading, writing, and mathematics in spite of normal intelligence and sensory abilities.

Aim: The aim of the study was to evaluate the effectiveness of CBTE training module on knowledge, attitude, and practices (KAP) of school teachers regarding learning disabilities in children.

Material and methods: This was a pre-experimental study carried out with one group pre-and post-test design. Three hundred fifty school teachers from a private school were randomly selected through a multistage cluster sampling method as study subjects from private and government schools who were handling the classes for primary school students at Kolar and the school teachers who had previous exposure in special schools and who had already worked as a counselor were not included in the study. Data were collected from the teachers through self-administrated structured questionnaires consisting of 150 items, which included sociodemographic characteristics, knowledge, attitude, and practice-related questions on learning disabilities in children. The data were analyzed by descriptive and inferential statistical methods.

Results: The findings indicated that the pre-and post-test mean enhancement scores of knowledge as 8.93±3.39, attitude mean enhancement as 38.85±14.03 and practice mean enhancement scores as 20.57±17.84 and the paired "*t*" test values with comparison of mean scores shows 49.18 for knowledge, 51.79 for attitude, and 21.57 for practice respectively, where it is statistically significant at $p < 0.05$ in terms of mean scores enhancement in KAP. The study findings showed that there is a highly statistically significant difference with a high positive correlation between pre-and post-test knowledge ($r = 0.81$, $p < 0.05$), attitude ($r = 0.75$, $p < 0.05$), and practice ($r = 0.79$, $p < 0.05$).

Conclusion: The CBTE training module is an effective method for enhancing knowledge, changing the desirable attitude, and developing good skills of school teachers regarding the identification and management of learning disabilities. Thus, the research recommended having teacher enrichment programs to establish and increase awareness about learning disabilities in children among school teachers. The CBTE training module was an effective means of enhancing the KAP levels among school teachers for handling children with learning disabilities.

Keywords: Learning disability, Knowledge, Attitude, Practice, School teachers

Abstract 93

Effectiveness of "Assisting women in normal vaginal delivery" simulation training on knowledge and skills among emergency medical technicians (EMTs) working in selected ambulance services, Bangalore

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Studies in India reveal that about one-third to one-half of maternal deaths occur at home or on the way to the hospital. A newspaper report states that, in January 2020, 1740 babies were delivered in Karnataka, in the Government initiated 108 Arogya Kavacha emergency response ambulances. This means at least four babies are delivered every day in the ambulances. Emergency medical technicians (EMTs) play a critical role in managing obstetric patients through timely pre-hospital medical interventions and transport to the health facility. Limited research exists describing the efficiency and outcome of care provided to women in imminent labor by EMTs. A quasi-experimental study with 30 EMTs was conducted to assess the effectiveness of simulation training in assisting women in normal vaginal delivery on the knowledge and skill of the EMTs. Knowledge tools and checklists were used to assess the knowledge and skill of EMTs in assisting women in normal vaginal delivery respectively. A pre-test followed by simulation training on assisting women in normal vaginal delivery was done on day 1. Post-test was conducted seven days thereafter. The major findings of the study was that the mean post-test knowledge value 17.80 (+4.483) was significantly higher than the mean pre-test knowledge value 9.80 (+2.905), $t = 2.48$ ($p < = 0.01$), and the mean post-test skill value 18.60 (+6.04) was significantly higher than the mean pre-test skill value 1.23 (+0.430), $t = 2.48$ ($p < = 0.01$). Hence, it shows that there was a significant improvement in the level of knowledge and skill of the EMTs in assisting women in normal vaginal delivery after the simulation training program. The study recommends such training across ambulance service providers, which will frequently reinforce and enhance the capacity of the EMTs, which in turn will benefit the enormous number of pregnant women, especially in the remote areas of the country, who rely on ambulances for being transported to the health facility for delivery.

Abstract 94

Effectiveness of core exercises in patients diagnosed with knee osteoarthritis

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Background: Knee osteoarthritis (OA) is a prevalent condition. Recent research on people with knee OA has addressed kinetic chain and core muscle contribution in disease progression. As a result, it is proposed that the current study examine the efficacy of core-specific strengthening exercises in conjunction with a routine rehabilitation regimen for knee OA and evaluate its efficacy on pain and patient-reported functional outcomes.

Methods/Design: A study was conducted with 15 participants who received a combination of core exercises and standard rehabilitation for four weeks. The study evaluated their pain levels using the visual

analog scale (VAS) and assessed patient-reported outcomes through the knee injury and osteoarthritis outcome score (KOOS) at both the beginning and conclusion of the four weeks.

Results: The data collected in the study were subjected to analysis using the median and interquartile range (IQR) with the statistical software JAMOVI. $p < 0.05$ was considered to be significant. Notably, all the parameters examined exhibited a statistically significant difference between their pre- and post-intervention values.

Discussion and Conclusion: Patients who completed a 4-week supervised exercise program experienced reductions in pain and improvements in patient-reported outcomes. These outcomes indicate the positive impact of exercise on fundamental pain mechanisms, suggesting that additional research in this area could offer a foundation for optimizing treatment approaches.

Keywords: Knee osteoarthritis, Core muscle, Strength training, Rehabilitation, Exercise therapy. Study Trial Registration: CTRI/2023/07/054805

Abstract 95

Perceived benefits and barriers of telerehabilitation for early intervention: A review

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Background and Introduction: Emerging technologies in the healthcare delivery system have made telerehabilitation an integral aspect of future-sustainable means of rehabilitation. It has been proven to be equally or sometimes more effective than conventional methods in adult rehabilitation services. In pediatrics, early intervention (EI), which is referred to as the healthcare services provided to infants and toddlers who are with/at risk of developmental delays or disabilities, is a growing area in telerehabilitation. Although the studies in this area are significantly limited, a few interventional studies using telerehabilitation have reported positive functional and goal-oriented outcomes in the study population. However, further expansion of telerehabilitation for EI is based on its perceived benefits of the stakeholders as well as the barriers to its usage. Hence, the study aims to review available studies and understand the various perceived benefits and barriers of telerehabilitation for EI of multiple stakeholders.

Material and methods: A comprehensive literature search using the keywords telerehabilitation, early intervention, and high-risk infants was performed in the search engines PubMed and Google Scholar. The search strategy was devised, and articles were selected based on the inclusion and exclusion criteria.

Results and discussion: Overall, 17 articles were screened, of which six were included in the review. PRISMA guidelines were used to screen the literature. Among the six articles included, there were three surveys, one qualitative study, one pre-post study, and one RCT. The benefits perceived by the administrators/coordinators and EI providers were flexibility of the sessions, increased accessibility for rural families to specialists, enhanced engagement of family members, prevention of communicable diseases to immunocompromised children, and high attendance. The benefits perceived by parents were the elimination of travel restrictions, access to EI providers from rural areas, reduced expense, better family education, improved functional performance, and attainment of family-centered goals. On the other hand, the barriers perceived by all stakeholders were lacunae between the equipment available at the delivering and community sites and technical difficulties such as access to high-speed internet. Further therapists reported barriers such as difficulty in assessing children and parental opinion that telerehabilitation could not be as effective as in-person treatment. However, the pre-post study and RCT reported better acceptability by parents, suggesting that providing an objective measure of outcome to the parent increases their confidence than qualitative reports.

Conclusion: Although there were certain barriers in accessing telerehabilitation for EI, the considerable number of benefits presses the need to minimize these barriers in the future and conduct quantitative studies to prove the actual efficacy of telerehabilitation for EI.

Keywords: Benefits, Barriers, Early intervention, Telerehabilitation

Abstract 96

Perception of exercise benefits and barriers in patients with chronic kidney disease undergoing haemodialysis in a tertiary care hospital

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Background and objectives: Chronic kidney disease (CKD) is a serious health problem that affects people all over the world, eventually progressing to end-stage renal disease (ESRD) requiring hemodialysis or other types of renal replacement therapy. Hemodialysis can help people with ESRD live longer and reduce their uremic symptoms, but it does not have any effect on the disease progression and leads to several complications, such as decreased muscle strength, aerobic capacity, and an increased risk of falls, which ultimately results in poor quality of life. All of these complications can be controlled with regular exercise, but the level of physical activity is considerably low in these patients, with just 6% being sufficiently 'active' among hemodialysis patients despite its tremendous benefits. One of the important factors that influences exercise behavior is their perception of exercise benefits and barriers. The objective of this study was to determine the perception of exercise benefits and barriers in CKD patients undergoing hemodialysis.

Methods: Ethical clearance was obtained from M.S. Ramaiah Medical College Ethics Committee. Following this, patients were recruited from M.S. Ramaiah Hospitals and were screened based on eligibility criteria. Three hundred twenty-three patients with CKD on hemodialysis in the age group between 18 and 70 years were included in the study after obtaining their consent. The perception of exercise benefits and barriers was evaluated using the Dialysis Patient-Perceived Exercise Benefits and Barriers Scale [DPEBBS].

Results: Descriptive statistics was used to analyze the data. According to the results of this study, the most frequently reported benefits of exercise were improved mood (91.38%), enhanced self-care abilities (87.69%), helped to lead an optimistic and active life (87.08%), and improved appetite (84.31%). The majority of patients (61%) reported

they do not exercise regularly, which could be attributed to barriers of exercise. The most frequently perceived barriers were frequent tiredness (73.23%), lack of knowledge on how to carry out exercise (65.54%), worry about feeling thirsty (64%), and lower extremity muscle fatigue (63.69%).

Conclusion: This study concluded that most of the patients do not exercise on a regular basis even though they have a positive perception of exercise, which could be attributed to barriers such as tiredness, lack of knowledge on how to perform exercise, worry about feeling thirsty after exercise, and lower extremity muscle fatigue.

Keywords: CKD, Hemodialysis, Exercise, Barriers, Benefits

Abstract 97

Evaluation of functional capacity of individuals with cardiorenal syndrome

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Background and objectives: Cardiorenal syndrome (CRS) attributes to a variety of conditions that affect the renal and the cardiac systems, and in which the renal or the cardiac system may become severely or persistently dysfunctional. Individuals with CRS present with clinical features such as easy fatiguability, progressive muscle loss, dyspnea, protein-energy malnutrition, and shortness of breath. There is limited data on the quantification of functional capacity in cardiorenal syndrome. Because of the frailty and associated comorbidities, a maximal test for evaluating functional capacity is not possible in this population; therefore, a submaximal test is more appropriate and safer to administer. As a result, the study's need is to measure functional capacity in cardiorenal syndrome employing a submaximal test such as 1 Minute Sit to Stand (1MSTS).

Methods: Individuals with CRS were asked to perform 1MSTS with arms crossed over a chair of height 18 inches. Vitals were monitored before, during, and after the individual performed the 1MSTS. Followed by handgrip assessment was taken using a hand-held dynamometer. The pre-and post-values of HR, BP, SPO2, and RPE were recorded before and after the test.

Results: The functional capacity of individuals with CRS was found to be 7.39 ±2.93 (1MSTS) and 19.80±4.29 (HGS).

Interpretation and conclusion: The study suggests that the functional capacity as well as handgrip strength of individuals with CRS is found to be significantly reduced.

Keywords: Cardiorenal syndrome, Heart failure, Functional capacity, Hand-grip strength, One minute sit to stand (1-MSTS)

Abstract 98

Usage of tele-physiotherapy among older adults post the onset of COVID-19 pandemic

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Background and Introduction: Tele-physiotherapy (Tele-PT) has been in existence since the 1980s and has proven benefits. Despite its benefits, utilization of Tele-PT among older adults is limited due to multiple barriers. COVID-19-related lockdown provided opportunities for increased utilization of Tele-PT services. As the world transitions out of the pandemic, the utilization of Tele-PT continues, but literature regarding the pattern of usage since the onset of the pandemic is limited.

Methods: Using a cross-sectional design, older adults (60–85 years) were recruited from both the outpatient facility of a tertiary care hospital and from residential communities in Bengaluru. Assuming usage at 40% (based on past work and literature), 7% margin of error and 95% confidence level, we proposed to include 188 participants for this study. A study-specific questionnaire was developed and administered to assess the usage of Tele-PT. Ethical approval was obtained from the Institutional Ethics Committee.

Results and discussion: Using convenience sampling, we screened 231 older adults, of which 190 participants (mean age 68.3±6.2 years, 51.5% men; 36 from the OPDs and 154 from the community) met the inclusion criteria and participated in the study. Between March 2020 and July 2023, 97/190 (51%) participants required physiotherapy services, and 47/190 (24.7%) participants used Tele-PT services. This was significantly lower than the anticipated usage of Tele-PT. However, among the participants who required physiotherapy services, 47 (48.4%) utilized Tele-PT services. The majority (89.3%, n = 42) were occasional users and on average, received 2.9 + 1.8 sessions. The primary reasons for using tele-PT services were specific therapy purposes (38.3%, n = 18), health promotion (31.9%, n = 15), and professional consultation (29.8%, n = 14).

Among the participants who needed physiotherapy services but did not use tele-PT; preference to in-person sessions and not being offered tele-PT services were cited as major reasons. Health systems across the world are trying to find a balance between the health, safety, and convenience of their patients. Technology is evolving at a rapid pace and offers unique opportunities to improve healthcare access. Tele-PT has several advantages and has the potential to improve access to health services.

Conclusion: Our study revealed that older adults were able to use tele-PT services in the post-pandemic period. However, the usage was not as high as anticipated. There is a strong need to address barriers to improve utilization of tele-PT services.

Keywords: Elderly, Exercise, Healthcare access, Telehealth, Tele-rehabilitation

Abstract 99

Comparison of balance in older adults with and without vestibulo-ocular reflex dysfunction

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Background: Balance is essential for normal daily life; it necessitates the integration of sensory information about the body's location in relation to its environment, as well as the ability to generate appropriate motor responses to govern body movement. The vestibulo-ocular reflex (VOR) is closely connected to our sense

of balance in the maintenance of gaze stability during head movements and indirectly contributes to our spatial orientation. VOR dysfunction can result in blurry vision, nausea, and difficulty in maintaining balance with head movements. Several studies support that balance ability decreases with age and that older people with some vestibular dysfunction have a higher risk of falls, little is known about people with and without VOR dysfunction. In this study, balance was compared in older adults with and without VOR dysfunction.

Material and methods: Materials used are a dynamic visual acuity test non-instrumented (DVAT-NI) to assess VOR, and a Mini-BESTest was used to assess balance. Participants were assessed for VOR by DVAT-NI and included in the study based on lines lost in Snellen's chart. Sixty samples met the criteria through convenience sampling, and their balance was assessed using Mini-BESTest.

Results: On comparing the Mini-BESTest between VOR-affected and not affected individuals, the *p*-value is 0.224. However, on further analysis of balance with age on VOR-affected individuals with Mini-BESTest components shows the *p*-value is 0.043 and 0.045, respectively.

Discussion: In this study, there is no significant difference in balance between VOR-affected and not affected individuals. Balance is not compromised because it is controlled by different sensory systems, such as the vestibular system (inner ear), proprioception (sense of body position), and vision. These systems work together to maintain postural stability and help us remain upright. On further analysis, VOR-affected individuals with age show significance in both reactive postural control and dynamic gait, which requires VOR for daily activities. The vestibulo-ocular and optokinetic systems are the two gaze stabilization mechanisms that are important for postural control to react and respond to the environment and preserve visual acuity during head movements with dynamic gait.

Conclusion: There was no significant difference in balance in older adults with and without VOR dysfunction. On further analysis, it shows significance in the components of reactive postural control and dynamic gait so assessment and training of VOR is suggested while balance and gait training.

Keywords: Balance; vestibulo ocular reflex; older adults; postural equilibrium.

Abstract 100

Holistic tele-counseling combined with visual feedback through a smartphone application to improve self-management in type 2 diabetes mellitus patients between the age group of 40-79 years: A randomized control trial

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Background or Introduction: Type 2 diabetes mellitus (T2DM) is a prevalent chronic condition affecting individuals across various age groups, including adults between 40 and 79 years. Effective diabetes self-management (DSM) plays a pivotal role in T2DM control and the prevention of its complications. This randomized control trial seeks to investigate the effectiveness of a 12-week holistic tele-counseling approach with visual feedback through a smartphone application to improve DSM in individuals with T2DM.

Material and methods: Participants aged 40–79 years, diagnosed with T2DM, were randomly allocated to two groups: an intervention group receiving holistic tele-counseling with smartphone application feedback and a control group receiving standard care. The intervention group engaged in holistic tele-counseling sessions comprising dietary guidance, customized exercise regimens, and meditation practices. They also used a smartphone application to monitor their progress and receive visual feedback.

The primary dependent variable, holistic tele-counseling, was central to the intervention. The independent variables encompassed HbA1c levels, waist circumference, and BMI, which were assessed before and after the 12-week counseling to determine changes in glycemic control and physical health.

Results and discussion: The results of this trial revealed substantial improvements across multiple domains. The intervention group, which received holistic tele-counseling coupled with smartphone application feedback, displayed a significant reduction in HbA1c levels.

Moreover, the intervention group exhibited marked decreases in waist circumference, stress levels, and BMI, suggesting the positive impact of dietary, meditation, and exercise guidance through tele-counseling. These reductions hold potential benefits for improving overall health.

The discussion highlights the holistic nature of the intervention, recognizing the intricate relationship between physical and mental well-being. Visual feedback through the smartphone application played a pivotal role in fostering *participant engagement* and *adherence* to self-management strategies. This tech-driven approach aligns with the increasing digitalization of health care, offering convenience and tailored support, particularly for middle-aged and older individuals.

Conclusion: This study emphasizes the significance of holistic care strategies encompassing both physical and mental health dimensions in T2DM management. Empowering middle-aged and older adults with *user-friendly technology and personalized guidance* can improve glycemic control, reduce cardiovascular risk, and enhance overall quality of life.

The comprehensive approach, incorporating dietary guidance, customized exercise regimens, meditation practices, and technology-driven support, effectively addresses the multifaceted challenges of T2DM.

Keywords: Type 2 diabetes mellitus, Holistic tele-counseling, Smartphone application, Visual feedback, Diabetes self-management, Personalized guidance, Engagement, Adherence, User-friendly technology

PHARMACY

Abstract 101

A systematic review of *NAT2* genotype/SNP-based isoniazid population pharmacokinetic models and original research insights into genetic characterization of *NAT2* among TB patients

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Background: Isoniazid is predominantly metabolized by the arylamine N-acetyltransferase 2 (NAT2) enzyme. Single nucleotide polymorphisms (SNPs) in *NAT2* gene could classify an individual into three distinct phenotypes, i.e., rapid (RA), intermediate (IA), and slow acetylators (SA). *NAT2* SA has an increased risk of developing adverse drug reactions such as antitubercular drug-induced liver injury (DILI) and higher isoniazid plasma exposures as compared to IA and RA. Hence, we conducted a systematic review of relevant articles to assess the significance of *NAT2* genotype/SNP on the clearance of isoniazid. Further, we characterized the *NAT2* SNPs, genotypes, and phenotypes among the TB patients who visited our tertiary care hospital.

Material and methods: Phase 1: A systematic search was conducted in PubMed and Embase to identify isoniazid population pharmacokinetic (PopPK) studies. The articles were considered only if had TB patients on isoniazid therapy, the isoniazid PopPK model was built using non-linear mixed effects modeling, and the parametric approach and *NAT2* genotype/SNP were tested as a covariate for the model development. Phase 2: Genomic DNA was extracted from the blood samples collected from 180 adult TB patients from December 2021 to June 2023, and 6 SNPs, rs1041983 (282C > T), rs1801280 (341T > C), rs1799929 (481C > T), rs1799930 (590G > A), rs1208 (803A > G), and rs1799931 (857G > A) in *NAT2* gene was analyzed using pre-designed TaqMan drug metabolism genotyping assays by QuantStudioTM 5 Real-Time PCR System.

Results and discussion: Phase 1: From the total of 12 articles identified, *NAT2* IA were the most frequently occurring acetylator group, and *NAT2* SA exhibited a two- or threefold decrease in isoniazid clearance compared to RA. Phase 2: There were 9 (5%), 118 (65.5%), and 53 (29.4%) TB patients with *NAT2* RA, IA, and SA status, respectively. The highest prevalence of *NAT2* SNP was observed in the *NAT2* 282C > T position (70%), which has been reported to be highly associated with the development of DILI. 25 patients were reported to develop DILI, out of which 14 and 11 patients had *NAT2* IA and SA status, implying a higher frequency of developing DILI among *NAT2* SA (20.7%) as compared to *NAT2* IA (11.8%) TB patients.

Conclusion: A *NAT2* genotype-based isoniazid PopPK modeling strategy could be implicated for precise isoniazid dosing among TB patients. We observed a high proportion of TB patients with *NAT2* SA status, warranting the need for introspection of isoniazid levels in these patients. We are currently conducting a prospective evaluation of isoniazid pharmacokinetic levels to potentially correlate with the *NAT2* genotype status for isoniazid dose optimization.

Abstract 102

Competitive intelligence: An essential pill in the pharmaceutical kit

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Competition in the technology industry has tightened, and new technology trends attract new companies to enter the industry. In recent decades, competitive intelligence has become an essential pill in the pharmaceutical kit due to the increasing complexity of the research and development processes in most industries and global competitions.

Applying competitive intelligence has shown to be a systematic approach that helps companies make better decisions.

In business competition, it is important to know the enemy, and competitive intelligence is one way to do this. Competitive intelligence (CI) is the ethical and legal business practice of identifying, processing, evaluating, and distributing intelligence about competitors, customers, products, and any other aspect of the business environment required to assist executives and managers in making strategic decisions for a company. The competitive intelligence process focuses on gathering information, wherein it is converted into intelligence and utilized in strategic decision-making. Competitive intelligence is often compared to competitor analysis; however, it is about analyzing competitors and the competitive environment as a whole.

NURSING

Abstract 103

Assessment of foot care self-efficacy and foot care behavior among patients with diabetes mellitus

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Introduction: According to IDF, an estimated 537 million people worldwide had diabetes in 2021, expected to rise to 643 million by 2030 and 783 million by 2045. India is known as the 'Diabetes Capital of the World'. Uncontrolled diabetes can lead to foot problems. It is one of the causes of disability. Foot care is often neglected. Poor practices have been identified as risk factors and can be prevented. Diabetic foot care is a simple, low-cost, and most effective nursing intervention that can reduce the rate of amputation by 85%. Self -efficacies influences foot self-care behavior and prevent foot ulcers and amputation.

Objectives:

1. To assess foot care self-efficacy and foot care behavior among diabetic patients.
2. To assess the relationship between foot care self-efficacy and foot care behavior.
3. To find the association between foot care self-efficacy, foot care behavior, and demographic variables.

Methodology: A quantitative approach was used. Non-probability convenient sampling technique was used to select 150 diabetic patients. Data were collected using sociodemographic variables, and Foot Care Confidence Scale, and the Foot Care Behavior Scale.

Results: Study findings showed that the majority of diabetic patients (98%) had high foot care self-efficacy, and 96% of the diabetic patients had high foot care behavior. The mean of foot care self-efficacy is 51.04 ± 4.396 SD, and the mean of foot care behavior is 64.50 ± 7.316 SD.

There was a moderate positive correlation between foot care self-efficacy and foot care behavior. The computed chi-square (x^2) values were more than the table value for all sociodemographic variables except age, gender, education, occupation, marital status, duration of DM, and foot care information. Hence, the research hypothesis is accepted.

Conclusion: The majority of the subjects had high foot care self-efficacy and foot care behavior. Regular foot examination and foot care can prevent foot ulcers and amputations.

Keywords: Self-efficacy, Foot care behavior

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