Journal of Clinical and Biomedical Sciences

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Abstracts of Oral presentation

Journal of Clinical and Biomedical Sciences

"A case- control study to assess the risk factors in cervical cancer patients attending tertiary care hospital, Shivamogga"

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Background : In India, cervical cancer continues to be a major public health concern and remains one of the most common cancers among women, second only to breast cancer. With this background a case- control study was undertaken to assess the Sociodemographic and Reproductive risk factors in cervical cancer patients attending tertiary care hospital, Shivamogga.

Methods : A case-control study, Cases were taken from gynaecology OPD and Controls were selected from the neibourhood of patients and also from patients other than cervical cancer in the hospital. Face-to-face interviews were conducted using a semi-structured questionnaire which included Socio-demographic proforma, personal history, menstrual history, sexual and reproductive health history, medical history and history related to utilization of health facilities. Data were analysed using descriptive statistics, Chi-square test, Logistic regression was used to generate crude Odds Ratio for each of the risk factors, while multivariate analysis for the significant variables was used to generate adjusted OR and 95% CI. $P < 0.05$ was considered to be statistically significant.

Results : The multivariate logistic regression analysis found that the following variables were found to be significant risk factors of Cervical Cancer: Unemployment (AOR: 5.38; 95% CI, 1.58-18.32; p = 0.0007), mixed diet (AOR: 13.37; 95% CI, 4.22-42.33; p = <0.001) and usage of cloth during menstruation (AOR: 4.69; 95% CI, 1.44-15.24; p = 0.010). **Conclusion** : The study findings revealed that there was a statistically significant association of selected risk factors with demographic variables therefore; a woman must gain adequate awareness on control of risk factors of cervical cancer. Mass awareness campaigns and screening programme may be initiated as per the guidelines laid down by government to reduce the modifiable risk factors to prevent cervical cancer.

Key words : Cervical Cancer, Case - control study, Risk factors, HPV.

Journal of Clinical and Biomedical Sciences

"Assessment of Sleep Quality and Its Association with Smartphone Usage Among Undergraduate Medical Students: A Cross-sectional Analytical Study"

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Background : 1.To assess sleep quality among undergraduate medical students using the Pittsburgh Sleep Quality Index (PSQI). 2.To assess smartphone usage patterns among undergraduate medical students and interns. 3.To determine the association between sleep quality and smartphone usage, among undergraduate medical students and interns.

Methods : A Cross-sectional analytical study was conducted among undergraduate medical students and interns in a Navodaya Medical College Hospital and Research Centre Raichur for 6 months. total 282 students were participated in the study , students were selected using a A stratified random sampling method was used to ensure adequate representation of each academic year. The total sample was proportionately distributed among the strata (1st year, 2nd year, 3rd year Part I, 3rd year Part II, and interns) Data were entered into Microsoft Excel 2019 and analyzed using SPSS version 25.0. Descriptive statistics such as frequency, percentage, mean, and standard deviation were used to summarize data.

Results : A total of 282 undergraduate medical students participated. Mean age was 22.45±2.02 years. The mean SAS-SV score was 23.39±10.64. Smartphone addiction was present in 61 (21.6%). Poor self-rated sleep quality was reported by 34 (12.1%). Smartphone addiction showed a positive association with poor sleep quality. Students with higher smartphone addiction scores tended to report poorer sleep quality. This finding supports the hypothesis that excessive smartphone use may adversely affect sleep.

Conclusion : Poor sleep quality and problematic smartphone usage are expected to be common among undergraduate medical students. Based on the observed non-normal distribution of major continuous variables, non-parametric statistical methods are recommended. The primary analysis should focus on the association between smartphone addiction scores and sleep quality using Spearman correlation, Chi-square analysis, and multivariable logistic regression to identify independent predictors of poor sleep

Key words : Pittsburgh Sleep Quality Index (PSQI), Smartphone Addiction, Smartphone Usage, Medical Students.

"A Cross-Sectional Study on Golden Hour Response and Catastrophic Health Expenditures for Road Injuries at SMIMER Hospital, Surat"

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Background : Road traffic injuries (RTIs) represent a premier cause of preventable mortality and a severe economic drain in rapidly developing industrial hubs. Achieving Sustainable Development Goal (SDG) Target 3.6—halving global road crash deaths—demands highly responsive tertiary trauma care alongside robust health financing mechanisms to protect vulnerable populations.

Methods : A hospital-based cross-sectional study was conducted among N = 150 acute RTI patients admitted to a major public tertiary care teaching hospital in Surat. Clinical data, time-to-treatment intervals, and direct/indirect out-of-pocket expenditures (OOPE) were analyzed. Catastrophic Health Expenditure (CHE) was defined as OOPE exceeding 10% of total annual household income.

Results : Vulnerable road users, mostly young males (72%) on two-wheelers, bore the highest polytrauma burden. Only 28% of patients reached definitive care within the "Golden Hour," with a median pre-hospital transit time of 110 minutes due to transit delays. Economically, despite subsidized care, secondary costs led to an average OOPE of ₹18,500 per case. Consequently, 43% of households suffered catastrophic health expenditures, forcing a significant majority into deep distress financing.

Conclusion : To achieve SDG Target 3.6, regional health governance must transition toward an integrated trauma care network. Strengthening pre-hospital emergency response systems, optimizing institutional triage efficiency, and expanding financial risk protection are vital prerequisites to reducing both mortality and poverty driven by RTIs.

Key words : SDG 3.6, Road Traffic Injury, Golden Hour, Catastrophic Health Expenditure

Journal of Clinical and Biomedical Sciences

Prevalence Of Depression, Anxiety And Stress Among Undergraduate Medical College Students In Cims, Chamarajanagar: A Cross-Sectional Study

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Background: Psychological conditions such as depression, anxiety, and stress are often overlooked because of their subtle presentation and chronic nature. Among medical students, these conditions can impair academic performance, interpersonal relationships, and patient care. This study estimated their prevalence and identified associated factors among undergraduate medical students at CIMS, Chamarajanagar.

Methods: A cross-sectional study was conducted over a period of 2 months among 450 Medical undergraduate students from the second year to the final year. After obtaining Institutional Ethics Committee clearance, the data were collected from students by interview method with the standard DASS-21 questionnaire. Participation was voluntary and anonymous. Data was entered into Microsoft Excel data sheet 2021 and analysed using Epi InfoTM 7.2.6 (CDC,2023) software.

Results: A total of 247 samples were collected by interview method from second year to final year MBBS students, which included 124 boys and 123 girls and 87 students from second year, 75 from third year and 85 from final year. The prevalence of Depression, anxiety and stress was found to be 29.6%, 36%, and 20.6% among undergraduate students, with 13% having mild depression, 12.1% having moderate depression, 2.8% having severe depression, and 1.6% having extremely severe depression.

Conclusion: Depression, anxiety, and stress were common among medical students, with anxiety being the most prevalent. Higher gadget use, inadequate sleep, and alcohol consumption were significantly associated with poor mental health. These findings highlight the need for routine mental health screening, counselling services, and lifestyle-based interventions to promote student well-being.

Journal of Clinical and Biomedical Sciences

The Impact Of Instagram Usage On Self-Esteem, Quality Of Sleep & Emotional Disorders Among Young Medical Students – A Cross-Sectional Study

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Background : Instagram, an online media platform, has become an integral part in adolescent social life. The social presence mostly weighs on likes, shares, and followers. These directly/indirectly impact the psychological milieu of young users. This study aims to investigate the Impact Instagram poses on self-esteem, Sleep quality, and emotional disorders among 1st,2nd year medical students of BMCRC, Ballari.

Methods : A cross-sectional study was conducted in April 2026, among 1st and 2nd year MBBS students in BMCRC, Ballari. After obtaining informed consent, a self-administered questionnaire was provided, and a total of 427 students participated. Descriptive statistics were calculated. The chi-square test was done to evaluate the associations between Demographic details and Self-esteem, sleep quality and emotional disorders (Depression, anxiety, stress). Furthermore, Binomial and multinomial regression analyses were conducted to identify independent predictors (active, passive Instagram usage and intensity of Instagram usage) and potential risk factors influencing these outcomes.

Results : Out of 427 Instagram users, the mean age: 19.1 ± 0.88 years; mean usage: 129 ± 90 min/day. The chi-square revealed, 1st MBBS students exhibited significantly higher rates of depression (46.3% vs 24.3%, p=0.001), anxiety (50.2% vs 35.4%, p=0.004), and stress (26.9% vs 14.6%, p=0.004) compared to 2nd Year students. Binomial logistic regression revealed that Intensity of Instagram usage is independently associated with poor sleep quality (OR=1.08, 95% CI: 1.02–1.13, p=0.005).

Conclusion : Beyond total time spent, the psychological intensity of Instagram engagement and passive consumption patterns are distinct behavioural drivers that independently impair sleep quality and exacerbate symptoms of depression and anxiety, necessitating targeted digital wellness and mental health screening strategies for medical students.

Key words : Instagram, self-esteem, Sleep quality, depression.

Tracking Kyasanur Forest Disease Through Space And Time: A Taluk Level Spatial Analysis In Shimoga District, Karnataka

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Background : Kyasanur Forest Disease (KFD) is a haemorrhagic disease caused by the arbovirus flavivirus and transmitted to man by the bite of infective ticks, first recognised in 1957 in Shimoga district of Karnataka state of India. This study aims to understand the spatial distribution of KFD cases taluk-wise in Shimoga district to understand the geographic spread of the disease better.

Methods : it is a spatial analysis of Taluk wise KFD data of shimoga district from 2021- 2025. With the available cases, annual incidence rate is calculated for the projected population using census 2011 population for each taluk each year in excel. then using QGIS, the cholorpeth maps are created. then using Geoda, the global moron and local moron's I was calculated to find the hotspots and clustering pattern.

Results : Thirthahalli showed the highest KFD incidence and represented the major disease burden during the study period. local moron's I revealed no hotspots but significant outlier as thirthahlli in 2021 & 2022 with LISA I value of -0.96 and p value of 0.001 each. Global Moron's I showed significant positive autocorrelation since 2023 with I value of 0.044(2025), 0.279(2024), 0.009(2023) & p value of <0.05.

Conclusion : •Thirthahalli consistently exhibited the highest KFD incidence, Local Moran's I identified Thirthahalli as a high low spatial outlier cluster in 2021 and 2022. Global Moran's I analysis demonstrated temporal variation in spatial autocorrelation, with weak negative, non significant autocorrelation observed in 2021 and 2022 & significant correlation since 2023.

Key words : KFD, SHIMOGA, SPATIAL ANALYSIS, KFD INCIDENCE RATE, TREND ANALYSIS.

Beyond Reporting : How HMIS Data Shapes Public Health Decisions in Kolar District , India

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Background : India's expanding digital health ecosystem has introduced multiple programme-specific platforms and utilization need to be documented. This study examined HMIS platforms in the context of achieving SDG 3 and evidence-based decision-making in public health decision-making, including factors influencing data use in Kolar district, Karnataka.

Methods : A descriptive qualitative study was conducted in Kolar district, Karnataka. Data was collected from the District Health Office, District Hospital, Taluka Hospital, four Primary Health Centres, and four Sub Centres. Participants representing administrative, facility, and field levels were interviewed. Data collected included observations of the portal and conducting Key Informant interviews and In-Depth Interviews regarding performance of the portals. Audio-recorded interviews were transcribed and analysis for their themes. Deductive content analysis across seven predefined domains assessed data use, while inductive thematic analysis identified facilitators and barriers.

Results : Thirty-five digital health portals were operatIonal across major health programmes. Frequently used platforms included RCH, NIKSHAY, IHIP, and ANMOL. While real-time reporting and supervisory oversight were strengthened, fragmented systems, overlapping data entry, and limited interoperability constrained effective data use. Structured analytics and cross-sector dissemination were largely absent. Key barriers included duplication, workload, connectivity issues, and limited analytic capacity.

Conclusion : The HMIS ecosystem at the district level in Kolar demonstrates substantial potential to advance SDG 3 through improved monitoring and accountability. However, fragmentation and limited analytical utilization restrict its contribution. Strengthening interoperability, reducing redundant reporting and promoting cross-program data integration are essential to transform reporting systems into decision-oriented platforms.

Key words : Health Management Information Systems, Digital Health, SDG 3, Health Systems Strengthening, Karnataka.

A Cross sectional study on the status of WASH facilities in Government High Schools of Kalaburagi Taluk

Journal of Clinical and Biomedical Sciences

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Background : Unsafe water, sanitation and hygiene cause substantial preventable morbidity in children; Schools are key settings for WASH interventions, yet gaps persist despite India's Swachh Vidyalaya policy framework. This study assessed drinking-water, toilet and hygiene-supervision status in government high schools of Kalaburagi Taluk, Karnataka, using the standardised Swachh Vidyalaya Puraskar tool.

Methods : A cross-sectional study was conducted in government high schools (Standard 8-10) of Kalaburagi Taluk, Karnataka, from December 2025 to May 2026. All 62 government high schools were included for universal sampling; complete data were obtained from 17 schools (8 urban, 9 rural) within the study period. Data were collected through direct observation and interview of the head of institution/sanitation in-charge using the Swachh Vidyalaya Puraskar self-assessment questionnaire, covering water, toilets, handwashing and supervision domains. Categorical variables were summarised as frequencies and percentages.

Results : A hand pump/bore well was the main water source in 82.4% of schools; only 17.6% had ever tested water quality. Toilet height/ventilation was adequate in 94.1%, 35.3% had separate staff toilets and 23.5% had lidded sanitary-waste dustbins. No one was specifically responsible for toilet cleaning (58.8%) or pre-meal handwashing supervision (58.8%); soap was available only in 47.1% of schools.

Conclusion : WASH infrastructure in surveyed schools was structurally adequate in several respects, but water-quality monitoring, sanitary-waste management and supervision of hygiene practices showed considerable gaps, particularly in rural schools. This warrants targeted strengthening of operations and maintenance.

Key words : School WASH, Sanitation, Drinking water, Hand hygiene, Swachh Vidyalaya Puraskar.

Journal of Clinical and Biomedical Sciences

Health-Seeking Behaviour Among the Fisherman Community in Karwar City: A Community-Based Cross-Sectional Study

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Background : Fishing communities experience occupational hazards, chronic illnesses, and limited healthcare access. However, evidence regarding their healthcare utilization and treatment-seeking behaviour in coastal Karnataka remains limited. Understanding their preferences and determinants of healthcare utilization is essential for strengthening public health services and improving healthcare delivery.

Methods : A community-based cross-sectional descriptive study was conducted among 595 fisherman households in Karwar City over 12 months. Data were collected using a semi-structured questionnaire covering socio-demographic characteristics, healthcare utilization, treatment preferences, self-medication, and determinants of facility choice. Descriptive statistical analysis was performed to summarize healthcare-seeking patterns.

Results : Among 595 households, 99.7% utilized formal healthcare services, while only 0.3% relied on informal providers. Self-medication was reported by 13.7% of respondents. Government healthcare facilities were preferred for immediate care (67.9%), acute illness (77.6%), chronic illness (73.4%), inpatient care (71.4%), and emergency care (80.8%). Easy accessibility and affordability were the primary reasons for choosing public healthcare services, whereas trust in healthcare providers and perceived.

Conclusion : The fisherman community demonstrated appropriate healthcare-seeking behaviour with predominant utilization of formal healthcare services and low self-medication practices. Strengthening accessibility, affordability, and quality of public healthcare facilities will help sustain positive healthcare utilization and improve health outcomes in this occupationally vulnerable population.

Key words : Fisherman community, Health seeking behaviour, Cross-sectional .

A Cross-Sectional Study on Prevalence of Refractive Errors And Its Association With Academic Performance Among School Children

Journal of Clinical and Biomedical Sciences

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Background : Refractive errors are the leading cause of preventable visual impairment in school children, directly impacting academic performance. And many affected children remain undiagnosed. Local-level evidence is essential to guide and strengthen screening & school health programs. This study estimates prevalence, assess association with academic performance & identifies socio-demographic risk factors.

Methods : A cross-sectional study was conducted in February–March 2026 at Sunshine Futuristic School, Sindhanur, Raichur, Karnataka. A total of 150 school children from classes 5th to 7th were selected by simple random sampling. Data were collected using a predesigned, pretested, semi-structured questionnaire. Visual acuity was assessed using Snellen's and Jaeger charts. Statistical analysis was performed using SPSS version 25.0; significance set at $p<0.05$.

Results : Among 150 children, prevalence of refractive errors was 53.3%. Myopia was the most common type (34.6%), followed by astigmatism (14.7%) and hypermetropia (4%). Children with average academic performance had the highest prevalence of RE (86.5%) compared to those with good (64.2%) and excellent (23.3%) performance, indicating significant association. Increased screen time, reduced outdoor activity and positive family history were key risk factors. Only 18% had prior eye examination.

Conclusion : Refractive errors affected 53.3% of school children, with myopia predominating. They were significantly associated with poor academic performance. Reduced outdoor activity, increased screen time and positive family history were key risk factors. Regular school vision screening and timely spectacle correction are essential to prevent avoidable visual impairment and improve scholastic performance.

Key words : Myopia, Academic performance, School children.

Assumption of Recency of Information- An Experimental Study on the Effect of Heuristics on Sequencing.

Journal of Clinical and Biomedical Sciences

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Background : Heuristics are mental shortcuts and here we deal the one which encodes time of occurrence of the described events into our mental models. It is hypothesized that we assume the last info to get reported to us being the latest. Objectives: To assess among participants, what place in the timeline do they allot to an information when there is no time stamp on it.

Methods : This is an interventional study and the subjects were students of Bachelors in Nursing (BSc Nursing), studying their 3rd year, posted for a period of five days, in Christian Medical College, Rural Unit for Health and Social Affairs at Vellore, Tamil Nadu. There was a total of 260 participants. At the end of usual training sessions for the day, an evaluation session was conducted, on alternate days. In total, three such sessions were held and on the last session they were given a question which had ambiguous answers. There was no specific right or wrong answer. Nonetheless, the answers chosen by them would suggest the exact point in the timeline they had placed the information on which the question is based. The bulk of the analysis was comprised of descriptive statistics.

Results : The subjects were aged between 18 and 32 years and 95% of them were females. Majority (93.08%) of the students assumed the given information to be new, if the effect of false memory is not taken into consideration. Even when such an effect on memory was in action, the number of students assuming the information to be new was 34.62% compared to just 3.85% of students who thought that the given information was old.

Conclusion : This study tries to prove a new type of heuristic related to recency of information. Majority of the participants indirectly suggested that they did assume the given information to be of a recent one, while it could have belonged to any point in the timeline. This heuristic, by altering temporal information in the mental model, can lead to wrong assumptions, conclusions and thus wrong decisions.

Key words : Heuristics, recency of information, causality, sequence of events, temporal mental model.

Road safety practices among degree college students in Chamarajanagar town: A cross-sectional study

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Background : Road traffic injuries are a major global public health crisis, resulting in over 1.3 million deaths annually and leaving 20–50 million people injured or disabled. From the studies 20-30% of the college students were found to have met with road traffic accidents in the past 1-2 years. There is lacunae in physical assessment of vehicle condition which is fulfilled in the present study.

Methods : This is a cross-sectional study conducted from December 2025 to February 2026 among degree college students from various disciplines in Chamarajanagar town. The sample size was calculated using formula for one sample proportion estimation i.e, 150. Cluster sampling is employed to select study participants. The data is collected by interview method using semi-structured questionnaire which contains sociodemographic details and questions regarding road safety practices. Data will be entered and analyzed in SPSS version 20 (trail version). For descriptive statistics frequencies and percentages will be used and for association Chi square test will be used.

Results : The study included 150 participants with 71% males. 73% of participants wore helmet to college. 55% of participants held valid driving licenses. 38% of the participants attend phone call while riding. 9% of the participants gave history of Road traffic accident in the past 2 years. 75% of the participants had both mirrors intact on their bikes.

Conclusion : There are better bike conditions among majority of the participants. Most of the participants possess Registration certificate. The magnitude of road traffic accidents among the students was low. There is significant number of students who are not having valid driving license and pollution under control.

Key words : Road safety, practices, cross sectional study, degree college students.

A qualitative study to explore facilitators and barriers for implementing school-based healthy lifestyle interventions among primary school children

Journal of Clinical and Biomedical Sciences

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Background : Childhood obesity and sedentary behaviours are increasing among primary school children, highlighting the need for early intervention. Despite schools being ideal settings to promote healthy lifestyles, limited qualitative research in India has explored the barriers, facilitators, acceptability, and feasibility of school-based interventions. This study aimed to address this gap.

Methods : A qualitative exploratory study was conducted in a private school to understand healthy lifestyle behaviours among preteen children and assess the feasibility and acceptability of school-based interventions promoting physical activity, healthy eating, adequate sleep, and reduced screen time. Using purposive sampling, 20 children (10 boys, 10 girls; 9-12 years), 9 parents, a physical education teacher, the principal, and the school coordinator were recruited. Data were collected through three FGDs and three IDIs using semi-structured guides. Discussions explored lifestyle behaviours, barriers, facilitators, and perceptions of interventions. Audio-recordings were transcribed verbatim and analysed thematically using the TICD framework, with ATLAS.ti supporting coding and data management.

Results : Three FDGs and three IDIs were conducted among students, parents and school stakeholders to explore the facilitators and barriers for implementing healthy lifestyle interventions among primary school children for improving their physical activity, diet , sleep and to reduce the screen time.Facilitators identified were supportive school infrastructure, teacher encouragement and parental support.Barriers identified were academic demands, tuition classes, after-school fatigue and safety concerns.

Conclusion : School-based interventions to improve physical activity, diet, sleep, and screen-time behaviours were found to be feasible and acceptable. Making effective use of existing school support systems while addressing barriers is essential.Integrating enjoyable activities into routine school programmes, with parental and institutional support, could promote sustainable healthy behaviours among children.

Key words : Qualitative study, childhood obesity, TICD framework, school-based intervention, physical activity.

Burnout among Medical Undergraduate Students at a Private Medical College in Bengaluru City: A Cross-Sectional Study

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Background : Burnout is a psychological syndrome characterized by emotional exhaustion, detachment, and reduced accomplishment due to chronic stress. Medical students are particularly vulnerable because of demanding academic training. This study was done to assess the prevalence and severity of burnout and its association with sociodemographic factors among students of a private medical college in Bengaluru

Methods : A cross-sectional study was conducted among 250 undergraduate medical students at Vydehi Institute of Medical Sciences and Research Centre, Bengaluru. Participants from all four years of MBBS course (except Interns) were selected using stratified random sampling. Burnout was assessed using the Copenhagen Burnout Inventory–Student Survey (CBI-SS), an adaptation of the original CBI developed by Campos et al. CBI-SS total average scores of 0-49, 50-74, 75-99 and 100 were considered as low, moderate, high and severe burnout respectively. Results were summarized using frequencies, percentages, means, and standard deviations. Independent t-test, one-way ANOVA, and Chi-square test were used and p-value <0.05 considered statistically significant.

Results : Among 250 MBBS students, 65.2% had low burnout, 30.0% moderate burnout, 4.4% high burnout, and 0.4% severe burnout. The mean overall burnout score was 44.46±16.21. Personal burnout had the highest mean score (52.28±17.58), followed by studies-related burnout (49.43±18.41), teacher-related burnout (38.00±22.59), and colleague-related burnout (37.32±20.62). There was no statistically significant association of burnout with sex (p=0.380), age (p=0.484), or year of study (p=0.190).

Conclusion : Burnout was prevalent among medical undergraduates, with one-third experiencing moderate-to-severe burnout. Personal and studies-related burnout contributed most to the overall burden. The findings highlight the need for regular screening and institutional measures to promote student well-being, especially among medical students

.**Key words** : Burnout, stress, undergraduate medical students

The Circle of Influence: Family, Peer, and Community Influences on Substance Use among Adolescents in Gadag District: A Cross-Sectional Study

Journal of Clinical and Biomedical Sciences

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Background : Adolescent substance use is a major public health concern. Family, peers, and community strongly influence these behaviours. This study aims to assess their influence on adolescent substance use in Gadag district and identify independent predictors to inform targeted prevention strategies.

Methods : A community-based cross-sectional study will be conducted among adolescents aged 10 – 19 years residing in Gadag district, Karnataka. A total of 250 adolescents will be selected using simple random sampling. Data will be collected using a pre-tested, semi structured questionnaire covering substance use and family-, peer-, and community-related factors. Data will be entered in Microsoft Excel and analyzed using SPSS version 26. Associations will be assessed using the Chi-square test and multivariable logistic regression, with $p \leq 0.05$ considered statistically significant.

Results : A total of 230 boys studying in PU colleges were included in the study. The prevalence of substance use was found to be 12%. Substance use was significantly more common among participants with family members using substances, close friends who used substances, and those reporting easy availability of tobacco or alcohol in their community. Multivariable analysis identified peer substance use, family substance use, and easy community access to substances as significant independent predictors of substance use among the participants.

Conclusion : Family, peer, and community influences significantly contribute to adolescent substance use, highlig

hting the need for comprehensive school- and community-based prevention strategies. **Key words** : Adolescents, Substance use, Family influence, Peer influence, Community factors

Sero-surveillance of viral hepatitis in a medical college hospital in Bangalore: A case record analysis

Journal of Clinical and Biomedical Sciences

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Background : Medical college hospitals function as sentinel sites under the National Viral Hepatitis Control Programme, which targets elimination of viral hepatitis as a public health threat by 2030. Systematic institutional surveillance is critical to monitor trends and strengthen programme response. Objective is to describe the trends and distribution of viral Hepatitis.

Methods : A three-year case record analysis was conducted at KIMS Hospital & Research Centre, Bangalore, from January 2023 to December 2025. Secondary data was retrieved from Microbiology laboratory, Blood Bank, ART centre, needle stick injury register, and HMIS portal. Data was analysed and expressed in terms of percentages.

Results : HBsAg positivity was 2.0% and anti-HCV positivity was 0.9%, with co-infection in 0.2% tested at Microbiology laboratory. Both showed a rising rend from 2023 to 2025, with males predominating. Positivity of HBV was 0.6% and HCV 0.2% for tested at blood bank. Among HIV-positive patients at the ART centre, HBV and HCV was 0.9% each. Needle stick injuries were most common among doctors.

Conclusion : The proportion of HBV, HCV & Co-infection of HBV and HCV is more in blood samples tested at Microbiology Laboratory when compared to Blood Bank and ART. The needle stick injury was more among doctors compared to other health care workers.

Key words : Sero-surveillance, Viral hepatitis,HBsAg,Anti-HCV,medical college hospital.

Journal of Clinical and Biomedical Sciences

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Background : (SDG-3) universal health coverage and reduction of communicable, non-communicable,environmental health burdens.To assess KAP regarding SDG-3 and sustainable health behaviors among health profession students; to determine the distribution of good, moderate, and poor KAP levels; to examine associations between sociodemographic characteristics and KAP scores; and to assess inter-domain correlations.

Methods : A cross-sectional study was conducted among health profession students at private medical institutions in central karnataka .183 respondents, 180 provided consent and were analysedConsenting participants were enrolled via convenience sampling and completed a self-administered, structured Google Forms questionnaire comprising three domains: knowledge (8 binary items; maximum score = 8), attitude (4 Likert-scale items; maximum score = 20), and practice (4 binary items; maximum score = 4). Participants were classified as Good, Moderate, or Poor using the standard 75% threshold method. Data were analysed using descriptive statistics and inferential tests including the Mann-Whitney U, Kruskal-Wallis, chi-square, and Spearman rank correlation. Statistical significance was defined as $p < 0.05$.

Results : Among 180 participants (mean age 21.79±4.33 years), only 51.7% identified SDG-3 and 28.9% were unaware of the SDGs. Mean knowledge, attitude, and practice scores were 5.79±1.90/8, 15.42±2.86/20, and 0.89±1.22/4, with 63.3%, 77.8%, and 77.8% classified as good, positive, and poor, respectively. Knowledge correlated with attitude ($r=0.392$, $p<0.001$) and was higher among SDG-3 identifiers ($p=0.003$); no sociodemographic associations were observed.

Conclusion : Health profession students demonstrated moderate-to-good SDG-3 knowledge & favourable attitudes, yet a substantial practice deficit(1) Formal integration of SDG-3 and sustainability content into health professional curricula; (2) regular institutional workshops and targeted awareness programs; (3) student-led public health campaigns to translate positive attitudes into practice(4) faculty capacity-building in sustainability pedagogy.

Key words : Sustainable Development Goals · Health Knowledge, Attitudes, Practice · Medical Education · Sustainable Health · Cross-Sectional Studies.

Productivity Loss and Depression in Breast Cancer Patients: Evidence from a Tertiary Care Hospital in Bangalore

Journal of Clinical and Biomedical Sciences

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Background : In India 2.5 million people live with breast cancer, with treatment cost being one of the highest among cancers accounting for 14% of all cancers. High cost of treatment, and lost productivity adds to the cost. Our study assessed productivity loss and depression in patients with breast cancer treated in a tertiary care hospital in Bangalore, Karnataka.

Methods : A hospital-based cross-sectional study was conducted among 110 women aged ≥18 years diagnosed with breast cancer and receiving care for at least one month. Productivity loss over the preceding four weeks was assessed using the Institute for Medical Technology Assessment Productivity Cost Questionnaire (iPCQ) and depression using the Patient Health Questionnaire-9 (PHQ-9). The main outcome variable assessed was productivity loss, which was measured as absenteeism and presenteeism at work. For homemakers, productivity loss was measured by assessing opportunity cost by substituting with basic minimum wages in Karnataka. The analysis comprised descriptive statistics to describe study variables.

Results : The mean age of study participants was 56.4±12.8 years, most 86 (78.2%) were married and 22 (20%) were illiterate. Most of them [84 (76.2%)] were financially dependent while 26 (23.6%) were BPL card holders. About 19 (17.3%) had paid work. Nearly half the participants were absent at workplace for >4weeks.The productivity loss due to paid work was INR 9423, while cost of presenteeism was INR 5162. Cost of unpaid work accounted to INR 12863. Alarmingly 46 (73%) screened positive for depression.

Conclusion : This study generates evidence on the less measured indirect cost of breast cancer and found a higher prevalence of depression in these patients. Our study information suggests designing social supportive measures for these patients is the need of the hour.

Key words : Breast cancer, Productivity loss, Depression, Cost of illness.

Prevalence & Determinants of Maternal Health Services Utilization among Mothers in Urban Bangalore's BMCRI Field Practice Area: A Mixed-Methods Study

Journal of Clinical and Biomedical Sciences

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Background : Despite improved delivery rates, continuous maternal care remains suboptimal in India, with minimal local mixed-method urban data. This BMCRI urban field study aims to: 1) estimate the prevalence of maternal health service utilization (ANC, institutional delivery, PNC), and 2) explore qualitative barriers and facilitators influencing healthcare-seeking behavior among women. **Methods** : This community-based mixed-methods study is conducted in BMCRI's urban area, Bangalore. Target population is mothers aged 18–45 years, 42 days to 6 months postpartum, resident for >6 months; exclusion criteria include being seriously ill or unavailable. Based on 88% PNC prevalence and 5% relative precision, a sample of n=210 is selected across 3 sectors via probability proportional to size and simple random sampling. Quantitative data from an NFHS-5-adapted questionnaire evaluates ANC, delivery, and PNC adequacy. Analysis involves descriptive statistics, Chi-square tests, and multivariable logistic regression ($p<0.05$). Qualitatively, focus group discussions undergo thematic analysis for barriers/facilitators, triangulated with quantitative findings. **Results** : Among 210 urban women, 80.1% registered in the first trimester, 80.8% completed ≥4 ANC visits, 91.4% received TT vaccination, 84.6% received IFA, 96.2% had institutional deliveries, and 82.4% utilized PNC services. Qualitative findings highlighted accessibility, awareness, care quality, and family support. Easy access and family encouragement promoted service use, while long waiting times, overcrowding, inadequate counselling, and quality gaps remained barriers. **Conclusion** : Maternal health service utilization among urban women in Bangalore was satisfactory, supported by awareness, accessibility, and family support. However, inadequate postnatal counselling and long waiting times remained barriers. Strengthening counselling, improving patient-provider communication, enhancing health education, promoting family involvement, and conducting community awareness programs may improve outcomes.

Key words : Maternal Health Services, Antenatal Care, Institutional Delivery, Postnatal Care, Continuum of Care.

A CROSS-SECTIONAL STUDY TO ASSESS WATER RELATED MORBIDITY AND WATER HANDLING METHODS IN URBAN FIELD PRACTICE AREA, RAICHUR

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Background : Unsafe water handling practices and inadequate sanitation are major contributors in water related morbidity in urban slums. This study is done to assess the prevalence of water related morbidity, household water handling practices, and factors associated with water related illnesses in the urban field practice area of Raichur, Karnataka.

Methods : A cross-sectional study was conducted among 90 households in the urban field practice area of Navodaya Medical College, Raichur, during 2024. Participants were selected using stratified random sampling. Data were collected using a pretested structured questionnaire covering socio-demographic characteristics, water source, storage and handling practices, sanitation, hygiene, and water-related morbidity during the previous six months. Data were analysed using SPSS version 26. Descriptive statistics summarized study variables, while Chi-square tests assessed associations between water related morbidity and explanatory factors. A p-value <0.05 was considered statistically significant.

Results : Overall, 31.1% of households reported water-related illness, with diarrhoea being the commonest morbidity. Intermittent water supply was reported by 52.2% of households, while 61.1% practiced household water purification. Water-related morbidity was significantly associated with intermittent water supply (p=0.046), non-potable water (p=0.022), and households with children aged below five years (p=0.006).

Conclusion : Water related morbidity remains a significant public health problem despite moderate awareness and household water treatment practices. Ensuring continuous safe water supply, improving effective household water treatment, and promoting hygienic water handling, particularly in households with young children, are essential to reduce the burden of water-borne diseases.

Key words : Water related morbidity, Water handling, Water quality; Urban health, Household hygiene.

Safety and Clinical Efficacy of Rabies Biologicals for Post-Exposure Prophylaxis Among the Elderly Population at the Anti-Rabies Clinic, Bangalore.

Journal of Clinical and Biomedical Sciences

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Background : Animal exposures is a public health problem occur largely in the underserved populations. Elderly are more vulnerable to animal bites, often unable to defend themselves and require immediate post exposure prophylaxis (PEP) which is effective in preventing rabies. The present study was conducted to study the safety and clinical efficacy of post exposure prophylaxis among this vulnerable group.

Methods : A longitudinal study was conducted among 54 elderly individuals (≥60 years) receiving PEP at an anti-rabies clinic in Bangalore. After obtaining written informed consent, details of socio-demographic characteristics, animal exposure, and PEP received were collected. Safety was assessed by recording local and systemic adverse drug reactions (ADRs) immediately after administration and subsequently up to day 28. Participants were followed up for 6 months after PEP to assess their health status and clinical efficacy.

Results : The study included 54 subjects with category III exposure, aged between 60-97 years. All the subjects were provided post exposure prophylaxis as recommended by NCDC, India. Among the study subjects, 12 (22.2%) reported ADRs such as pain (14.8%), itching (3.7%), erythema (1.9%) and Malaise (1.9%); which were mild and resolved without any complications. At six months of follow-up, all participants were healthy and alive, indicating 100% clinical efficacy.

Conclusion : The post exposure prophylaxis provided was safe and clinically effective in preventing rabies among the elderly in category III animal exposures and supports its continued usage in this vulnerable group.

Key words : safety, clinical efficacy, rabies biologicals, post exposure prophylaxis, elderly .

Improving Menstrual Hygiene Management among Adolescent Girls in High-Risk Areas of Tumkur District, Karnataka: An Operational Research

Journal of Clinical and Biomedical Sciences

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Background : Menstruation, although a normal biological event, remains a source of silence, shame, restriction and morbidity. Frontline health workers are primary delivery agents of knowledge, supplies and counselling on menstrual hygiene. Study aims to determine the effectiveness of intervention in improving knowledge and practice of menstrual hygiene management among adolescent girls & frontline workers.

Methods : Pre- and post-intervention, with multistage random sampling method was used to select adolescents from three talukas. The intervention training for frontline workers; adolescent awareness sessions by frontline workers; the establishment of MHM corners; MHM committees; and supportive supervision using structured checklists were conducted. Pre-tested, validated interviewer-administered structured questionnaire was used to estimate knowledge and practice before and after intervention in adolescents and in frontline workers and composite scores were derived. 115 frontline workers, 443 pre & 431 post adolescent girls were analyzed. Item-level changes were tested with chi-square with odds ratios; domain scores with Mann-Whitney U tests. $p < 0.05$ was considered as statistically significant.

Results : The adolescent composite KAP score rose from 75.1 (13.6) to 92.8 (7.5) (mean difference 17.8 (16.3 to 19.2), $p <0.001$. Frontline-worker composite KAP rose from 78.4 (7.5) to 85.4 (7.1) (mean difference 7.0 (5.1 to 8.9), $p <0.001$. The largest single adolescent item-level gain was in correctly identifying the uterus as the bleeding organ & the largest single frontline-worker gain was in rejecting the 'impure blood' menstrual myth. All three taluks recorded statistically significant gains.

Conclusion : A coordinated intervention through existing health care system can produce improvements in adolescents and frontline workers menstrual health in marginalized rural communities. The model is feasible, replicable, and scalable within existing scheme. Future iterations should incorporate anonymous longitudinal identifiers, multi-sectoral outcome tracking, and direct biomarkers of reproductive health.

Key words : Adolescents, Anganwadi teacher, ASHA, Frontline workers, Menstrual Hygiene Management.

Journal of Clinical and Biomedical Sciences

Dr Girish J

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Background : Learning style preferences influence how students acquire and retain knowledge. Understanding these preferences can help educators adopt effective teaching strategies in health professions education. However, comparative data across medical, dental, and allied health students are limited. This study aimed to determine learning style preferences using the VARK questionnaire.

Methods : A cross-sectional study was conducted among undergraduate students from medical, dental, and allied health programs at a tertiary teaching institution in Mangalore, India. Participants aged 18 years and above were selected using stratified random sampling. Data were collected using a structured questionnaire comprising socio-demographic details and the Visual, Aural, Read/Write, and Kinesthetic (VARK) questionnaire version 8.2. A total of 568 students participated. Data were entered into Microsoft Excel and analyzed using SPSS version 29. Descriptive statistics were used to summarize variables, and associations between learning styles and demographic, academic, and study-related factors were assessed using the Chi-square test. A p-value <0.05 was considered statistically significant.

Results : Among 568 participants (mean age 20.49±2.56 years), kinesthetic learning was the predominant preference (41.0%), followed by aural (26.6%), multimodal (14.4%), read/write (12.3%), and visual (5.6%). Learning style was significantly associated with course of study ($p=0.001$), year of study ($p=0.002$), study methods ($p<0.001$), learning resources, reading patterns, and perceived learning effectiveness ($p<0.05$). No significant association was observed with gender or academic performance.

Conclusion : Kinesthetic learning was the predominant learning style among undergraduate medical, dental, and allied health students. Learning preferences varied according to course and year of study but were not associated with gender or academic performance. Incorporating practical, interactive, and multimodal teaching approaches may better address diverse learning needs and enhance student engagement and learning outcomes.

Key words : Learning styles, Medical education, VARK.

Prevalence of Poor Sleep Quality among Undergraduate Medical Students in Coastal Karnataka: A Study based on the Pittsburgh Sleep Quality Index

Journal of Clinical and Biomedical Sciences

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Background : Poor sleep quality is a growing public health concern among medical students worldwide. It is associated with impaired academic performance, increased stress, anxiety, and reduced quality of life. This study was conducted to determine the prevalence of poor sleep quality and its associated factors among undergraduate medical students using the Pittsburgh Sleep Quality Index (PSQI).

Methods : A descriptive cross-sectional study was conducted among 228 undergraduate medical students at a medical college in Uttara Kannada district, Karnataka, India. Students were selected using stratified random sampling. Data were collected using a pre-designed, structured, self-administered questionnaire consisting of socio-demographic and lifestyle variables along with the Pittsburgh Sleep Quality Index (PSQI). A global PSQI score of ≥5 was considered as poor sleep quality. Data were analysed using SPSS version 27.0. Chi-square test and binary logistic regression were used to identify factors associated with poor sleep quality. A p-value <0.05 was considered statistically significant.

Results : Among 228 Medical students -mean age 18–21 years, 53.5% male, 64.9% had normal BMI, 59.6% were from urban areas. Most lived in hostels 82.9%, shared rooms 89.5%, received family-funded education 75.4%. 58.3% reported that noise/crowding affected their sleep. The mean global PSQI score was 4.73 ± 2.48. It includes late bedtime after 12 am 46.1%, sleep latency of 16–30 minutes 38.6%, and 6–7 hours' sleep duration 46.1%. Overall, 64.9% had good sleep quality ,35.1% experienced poor sleep quality. **Conclusion** : A prevalence of poor sleep quality was observed among medical students in this study. The findings highlight the need for implementing sleep hygiene education, stress management programs and institutional interventions to improve sleep quality among future healthcare professionals.

Key words : Sleep quality, Pittsburgh Sleep Quality Index, PSQI, Medical students, Prevalence

Prevalence of frailty and its components among the elderly in rural field practice area of the tertiary care centre, Chamarajanagar

Journal of Clinical and Biomedical Sciences

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Background : Frailty is conceptually defined as a clinically recognizable state in which tFrail individuals are more susceptible to stressors and have likelihood of experiencing negative health .The objectives of the study was to estimate the prevalence of frailty among the elderly in the rural area and to determine the components of frailty and factors associated with frailty among the elderly.

Methods : A cross-sectional study was conducted among elderly (≥60 years) in the rural field practice areas . A sample of 90 (including 15% non-response) obtained by $n=Z^2_1-\alpha/_2p(1-p)/d$. Udigala and Harave were selected by simple random sampling, with proportion allocation (44 and 46 participants required in each)). Households were selected by systematic random sampling (every 4th household), and one eligible elderly was chosen by lottery when required. Frailty was assessed using the Modified Fried Frailty Score and components by Tilburg Frailty Indicator. Grip strength was measured using a CAMRY dynamometer (mean of three trials). Data were analysed in Jamovi 2.6.44.0.Descriptive statistics, normality tests, Chi-square/Fisher's exact test, and logistic regression .($p<0.05$ is significant).

Results : The prevalence of frailty among elderly was 58.9% and prefrail 41.1%. Frailty was more among male which does not show statistical significance and comorbidities like musculoskeletal disease (p value 0.028) was significant.

Conclusion : Assessment of frailty enables community health workers to identify elderly individuals who are vulnerable and at higher risk due to decline in physical functioning. Early identification of pre-frail individuals provides an opportunity for timely interventions, including strengthening exercises and lifestyle modifications, which can help improve physical health, prevent further functional decline, and enhance overall quality of life.

Key words : Frailty, Elderly, Rural, Fried Frailty Score, Tilburg Frailty Indicator.

Awareness regarding harmful effects of second hand smoke on pregnancy and its outcomes among antenatal women attending tertiary care centre.

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Background : Tobacco exposure during pregnancy through active smoking or second-hand smoke (SHS) leads to miscarriage, LBW, preterm birth & congenital anomalies. This study aims to assess magnitude of SHS exposure during pregnancy & compare knowledge regarding effects of active smoking, passive smoking & other forms of tobacco on pregnancy among exposed to SHS & non-exposed antenatal women.

Methods : This was a cross sectional study. A convenient sample of 268 antenatal women who are attending OPD/IPD of department of OBG of tertiary care centre attached to government medical college from 01/04/2026 to 10/06/2026. After obtaining informed written consent from the participant who agreed to participate in the study data on socio-demographic profile, exposure to SHS during pregnancy either in home/public/work place was collected using validated pretested semi-structured questionnaire by interview method. Participants awareness regarding the harmful effects of tobacco smoke (both passive and active) & other forms of tobacco on pregnancy & its outcome was also collected from all the participants & compared.

Results : Out of 268 ANC mothers 79 (29.5%) were exposed to SHS. SHS exposure was significantly associated with the educational status of the mother ($p=0.002$), educational status ($p<0.001$) & occupation ($p=0.007$) of the husband. Knowledge regarding the harmful effects of tobacco was generally good. Awareness about smoking is injurious to health was significantly higher among SHS exposed than non-exposed, but specific adverse pregnancy and fetal outcomes was low & difference b/w the group was insignificant.

Conclusion : Nearly one-third mothers were exposed to SHS, indicating a significant public health concern. Although general awareness regarding the harmful effects of smoking was high, knowledge of the specific effects of active smoking, passive smoking & other forms of tobacco on maternal & fetal health was inadequate, highlighting the need for targeted antenatal education & smoke-free home interventions. **Key words** : Pregnancy Outcomes, Tobacco Control, Smoking & Low Birth Weight.

Green Ophthalmology In Practice: An Evaluation Of Environmental Sustainability In Cataract Surgery In A Tertiary Care Hospital – A Retrospective Study

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Background : Sustainable surgery is increasing clinical responsibility. SICS has environmental footprint from disposable consumables, energy use, sterilization processes. As healthcare moves toward net-zero emissions, institution-specific evidence on waste, carbon footprint, resources & cost-effectiveness is needed. This study assesses SICS as a sustainable model for cataract surgery in clinical practice.

Methods : A 12-month observational operating theatre sustainability audit was conducted from May 2025 to May 2026 in the Department of Ophthalmology of a tertiary care hospital. Monthly data were collected for total ophthalmic OT surgeries, SICS volume, OT working days, OT hours, biomedical waste categories, electricity consumption, water consumption, sterilization cycles, reusable instruments and disposable surgical materials. Carbon emissions were estimated using electricity consumption, sterilization energy and waste-related emission factors. Sustainability practices were assessed in context of standard OT asepsis, biomedical waste segregation & sterilization protocols. Independent t-test is used for subgroup comparisons and Correlation analysis for waste vs duration and cost vs instruments used.

Results : During the study, 3,291 ophthalmic surgeries were performed over 325 working days, including 2,839 SICS (86.3%) of total surgical volume. Total waste was 1,356.9 kg (0.478 kg/surgery), mainly yellow biomedical waste (38.4%), red recyclable waste (35.4%) & black general waste (23.1%). Electricity & water use were 15,017 kWh & 81,585 L. Sterilization achieved 10.3 instrument sets/cycle. Reusable materials accounted for 53.6%. Estimated carbon emissions were 11,274.6 kg CO_2e (3.97 kg CO_2e per SICS)

Conclusion : High volume SICS demonstrated a low environmental footprint supporting its role as sustainable cataract surgery model. This was achieved through reuse of sterilizable instruments, optimized autoclave batching and rational disposable use, without compromising surgical safety or infection-control standards. Thus SICS offers a scalable approach for sustainable eye care in resource-conscious settings.

Key words : Green ophthalmology, small incision cataract surgery, carbon footprint, biomedical waste, reusable instruments

A Cross-Sectional Study To Assess Water Related Morbidity And Water Handling Methods In Urban Field Practice Area, Raichur

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Background : Unsafe water handling practices and inadequate sanitation are major contributors in water related morbidity in urban slums. This study is done to assess the prevalence of water related morbidity, household water handling practices, and factors associated with water related illnesses in the urban field practice area of Raichur, Karnataka.

Methods : A cross-sectional study was conducted among 90 households in the urban field practice area of Navodaya Medical College, Raichur, during 2024. Participants were selected using stratified random sampling. Data were collected using a pretested structured questionnaire covering socio-demographic characteristics, water source, storage and handling practices, sanitation, hygiene, and water-related morbidity during the previous six months. Data were analysed using SPSS version 26. Descriptive statistics summarized study variables, while Chi-square tests assessed associations between water related morbidity and explanatory factors. A p-value <0.05 was considered statistically significant.

Results : Overall, 31.1% of households reported water-related illness, with diarrhoea being the commonest morbidity. Intermittent water supply was reported by 52.2% of households, while 61.1% practiced household water purification. Water-related morbidity was significantly associated with intermittent water supply (p=0.046), non-potable water (p=0.022), and households with children aged below five years (p=0.006).

Conclusion : Water related morbidity remains a significant public health problem despite moderate awareness and household water treatment practices. Ensuring continuous safe water supply, improving effective household water treatment, and promoting hygienic water handling, particularly in households with young children, are essential to reduce the burden of water-borne diseases.

Key words : Water related morbidity, Water handling, Water quality; Urban health, Household hygiene.

Journal of Clinical and Biomedical Sciences

Impact of Health Education on improvement in hemoglobin level among pregnant Anemic mothers

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Background : Anaemia is one of the major contributory factor to maternal morbidity and mortality in many underdeveloped and developing countries. 5 The widely used strategies to improve maternal nutritional status during pregnancy are nutritional education and counselling.

Methods : A quasi-experimental study was conducted among 88 mild to moderately anaemic pregnant women attending Urban Health training centre of SSIMS & RC, Davanagere . Pregnant women was assigned to receive Health education in intervention group (n = 39) and regular health care in control group (n = 38). Health education for interventional group and regular care for control group was continued during every month during their follow up period and at the end of the three months of follow up period, haemoglobin level was measured.

Results : In this study , Out of 88 pregnant women enrolled, 77 completed the study (Intervention: 39; Control:38). The mean increase in hemoglobin level was significantly higher in the interventional group (2. 685+ 0.9555g/dl) compare to the control group(1.787+ 0.7356g/dl).The difference between two groups was statistically significant ($t=4.61$, $P < 0.001$).

Conclusion : This study shows the Provision of Health education with regular follow up visits leads to increase in the haemoglobin level among pregnant anaemic mothers.

Key words : Health Education, Quasi-experimental study, Anemia

Journal of Clinical and Biomedical Sciences

A prospective study on safety and efficacy of autologous serum therapy in chronic urticaria patients

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Background : Chronic urticaria affects about 1% of the population and significantly impairs quality of life. Although antihistamines are the mainstay of treatment, many patients remain symptomatic. As 30–50% of cases have an autoimmune basis, autologous serum therapy (AST) may offer benefit. This study aims to evaluate the safety and efficacy of AST in patients with chronic urticaria.

Methods : A prospective study was conducted at an Allergy Clinic affiliated with a tertiary care medical college hospital in Bengaluru from September 2025 to February 2026. Using purposive sampling, 110 patients with chronic urticaria were enrolled based on a calculated sample size accounting for 20% loss to follow-up. All participants underwent the Autologous Serum Skin Test (ASST), and ASST-positive patients received weekly intramuscular autologous serum therapy for 8 weeks. Treatment response was assessed using the Urticaria Total Severity Score (TSS), Dermatology Life Quality Index (DLQI), and Visual Analog Scale (VAS) at baseline, week 4, and week 8, with follow-up until week 16. Data were analyzed using descriptive statistics and paired t-test.

Results : Of the 96 participants who completed follow-up, 58 (60.4%) were females and 38 (39.6%) males, with a mean age of 39.1±13.5 years. Mean TSS decreased from 16.8±1.81 at baseline to 6.46±2.75 at week 16. Mean DLQI improved from 12.8±4.2 to 4.6±2.7, while mean VAS improvement was 64% at week 16. Adverse effects were mild and limited to transient local pain and swelling at the injection site.

Conclusion : Autologous serum therapy was found to be a safe, effective, and well-tolerated treatment for chronic urticaria, resulting in reduced disease severity and improved quality of life. AST may serve as a cost-effective adjunctive therapeutic option, particularly in resource-limited settings and in patients inadequately controlled with antihistamines. Larger multicentric studies with longer follow-up are recommended to further establish its long-term efficacy and safety.

Key words : Urticaria, Chronic disease, Serum, Safety, Angioedema.

Journal of Clinical and Biomedical Sciences

AI in Med Ed & Clinical Training: A Comp Study of Awareness, Use & Acceptance among Undergrad vs Postgrad Med Students

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Background : Background & Rationale: AI has immense potential to revolutionize medical education and clinical practice. However, student adoption depends heavily on their current awareness and institutional support. Objective: To assess the awareness, acceptance, and actual use of AI among 200 undergraduate and postgraduate medical students at two medical institutions in Raichur, India.

Methods : Methodology: This quantitative study used a descriptive and analytical research design to evaluate AI awareness, acceptance, and utilization among medical students.Sampling & Data: Using stratified random sampling, primary data was gathered via a structured questionnaire from 200 undergraduate (MBBS) and postgraduate (MD/MS/DNB) students at two medical institutions in Raichur, India. Secondary data came from books, journals, and reports.Variables & Analysis: Independent variables (IVs) were AI acceptance (H_1) and AI awareness (H_2); the dependent variable (DV) for both was AI utilization. Data was analyzed using MS Excel and SPSS v27. Descriptive stats (frequency, %, mean, SD) summarized demographics, while inferential stats (paired t-test, Pearson's correlation) tested hypotheses.

Results : Study of 200 med students: <25 yrs (45.5%), 25-30 (28.5%), >30 (26%). 53.5% M, 46.5% F. 54.5% PG, 45.5% UG. 57.5% private, 42.5% govt. 44% urban, 31% rural, 25% semi-urban. 53.5% had AI training. AI workshops: >3x (31.5%), none (25.5%), 1x (24.5%), 2-3x (18.5%). Net/day: 2-4h (31%), 4-6h (25.5%), >6h (23%). Digital platform use: 27% some, 24.5% none. Sig. diff. found in AI acceptance/use between UG & PG. Also, a sig. positive link exists between AI awareness & its use in med ed/clinical training.

Conclusion : Conclusion: AI can revolutionize med training. Students are positive, but actual use is limited by a training & curriculum gap. High AI awareness directly drives higher utilization. Implication: AI literacy & hands-on exposure are critical for successful tech adoption in an increasingly digital, data-driven healthcare sector. Recommendation: Med institutions must integrate AI courses, practical workshops, & tech-medical collaboration to build student proficiency & readiness.

Key words : Artificial Intelligence (AI), Medical Education, Awareness of AI, Utilization of AI, Clinical Training.

Journal of Clinical and Biomedical Sciences

A Longitudinal Study of the Burden, Trajectories and Associated Factors of Postpartum Depressive Symptoms Among Postnatal Mothers in Bengaluru

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Background : Postpartum depression (PPD) is a common yet under-recognized maternal mental health condition affecting maternal wellbeing, infant development and mother–child bonding. Longitudinal studies on postpartum depressive symptoms in India remains limited. This study assessed the burden, trajectories and associated factors of postpartum depressive symptoms during the first six months after childbirth.

Methods : A prospective longitudinal study was conducted among 96 postnatal mothers recruited consecutively at a maternity hospital in Bengaluru, India. Postpartum depressive symptoms were assessed using the Edinburgh Postnatal Depression Scale (EPDS) within 0–5 days after childbirth, at 6 weeks, and at 6 months postpartum. An EPDS score ≥10 was considered indicative of postpartum depressive symptoms. Longitudinal analyses included 77 mothers who completed all follow-up assessments. Changes in EPDS scores were analysed using the Friedman test, while associated factors were assessed using Chi-square/Fisher's Exact tests and binary logistic regression.

Results : Among 77 mothers, postpartum depressive symptoms were present in 14.3% at baseline, 3.9% at 6 weeks, and 14.3% at 6 months. EPDS scores changed significantly across follow-up (Friedman χ^2=10.63, p=0.005). Most mothers remained symptom-free (76.6%), while 9.1% recovered, 9.1% developed new-onset symptoms, and 5.2% had persistent symptoms. Inadequate partner and social support, sleep disturbance, and poor maternal health were significantly associated with postpartum depressive symptoms.

Conclusion : Postpartum depressive symptoms followed an evolving course, with symptom reduction during the early postpartum period and emergence of new-onset symptoms by 6 months. These findings support continued maternal mental health surveillance beyond the routine postpartum period, alongside strengthening partner and family support, promoting maternal self-care, and addressing sleep-related difficulties.

Key words : Postpartum depression, Longitudinal study, Maternal mental health, Edinburgh Postnatal Depression Scale.

Journal of Clinical and Biomedical Sciences

Self-Care Practices and Their Association with Glucose Levels Among Patients with Diabetes Mellitus Attending a RHTC In Raichur, Karnataka

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Background : Type 2 diabetes mellitus (T2DM) is a leading cause of global morbidity and mortality. The prevalence of diabetes mellitus (DM) has nearly quadrupled over the past two decades from 425 million in 2017 to 629 million by 2045, with 90% of cases being T2DM. The International Diabetes Federation estimates that India has nearly 74.2 million diabetes patients, expected to reach 92.9 million by 2030.

Methods : Approval from Institutional Ethics Committee was obtained prior to the study. A cross sectional analytical study was conducted at rural health center attached to Navodaya medical college in Karnataka. The study was conducted for 2 months, from 1st April – 31st May 2026, among 314 consenting adults (>18 years) with T2DM attending the rural health center. The sample size was calculated as 314. Non probability (consecutive) sampling was used till required sample was reached. Sociodemographic profile and Diabetes Self-Management Questionnaire- Revised (DSMQ-R) tools were used to assess self-care practices among participants.

Results : Among 314 participants (mean age 57.3±14.1 years), 63.7% were female. Most were married, illiterate, and belonged to Modified BG Prasad Class IV. Mean DM duration was 2.4±1.8 years; 89.5% used OHAs. Mean BMI was 28.2, with 64.3% overweight/obese. Satisfactory self-care was seen in 196 participants. It was significantly associated with education ($p=0.014$) and BMI ($p=0.041$), and negatively correlated with FBS ($r=-0.30$, $p<0.001$).

Conclusion : Around two-thirds of participants demonstrated satisfactory self-care, which was significantly associated with higher education and lower categories of BMI. Further self-care scores significantly correlated negatively with FBS.

Key words : Diabetes mellitus, self-care in T2DM, Fasting blood sugar .

Journal of Clinical and Biomedical Sciences

Gaming Ecology among Undergraduate Medical Students: Gamer Typology, Gaming Behavior, and Gender Differences in Gaming Addiction.

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Background : Internet gaming disorder is an emerging behavioural addiction among young adults. Evidence on gaming behaviours and gamer typologies among Indian medical students is limited. This study assessed gaming addiction, classified gamer typologies, described gaming behaviours, and examined gender differences among undergraduate medical students.

Methods : A cross-sectional study was conducted among first- to fifth-year MBBS students and interns at Bangalore Medical College and Research Institute, Bengaluru. A total of 107 participants (n=107) were included. Data were collected using a semi-structured socio-demographic questionnaire, the 7-item Gaming Addiction Scale, and standardized player typology assessments. Data were entered and analyzed using SPSS software. Appropriate descriptive and inferential statistical methods were applied based on the nature of the data obtained.

Results : The overall prevalence of gaming addiction was 6.2%, increasing to 31.0% among active gamers. Significant gender differences were observed, with males exhibiting a higher risk of gaming addiction than females (59.9% vs. 46.0%; $p<0.001$). Competitive gamer typologies predominated among males, whereas females preferred casual gaming genres.

Conclusion : Understanding the gaming ecology of medical students is essential for identifying students at risk and designing targeted interventions. The findings support early screening and gender-sensitive counselling strategies to promote mental well-being, contributing towards Sustainable Development Goal 3 (Good Health and Well-being), particularly target 3.4; which focuses on promoting mental health and well-being.

Key words : Behavioral addiction, medical education, Gender differences, Gaming Addiction Scale, Gamer typology.

Journal of Clinical and Biomedical Sciences

Prevalence and Psychosocial correlates of premenstrual syndrome among adolescent girls; A community based cross-sectional study

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Background : Menstrual health is vital to achieving the SDGs, yet Premenstrual Syndrome (PMS) and its severe form, Premenstrual Dysphoric Disorder (PMDD), remain overlooked among adolescent girls. These conditions affect mental well-being, school participation, and daily functioning, while stigma and limited support deepen gender inequities, hindering progress towards SDGs 3, 4, and 5.

Methods : A community-based cross-sectional study was conducted among 447 adolescent girls aged 13–19 years of a taluka in Tumakuru district, Karnataka, using multistage stratified cluster sampling. Data were collected using interviewer-administered questionnaires and validated tools assessing Premenstrual Syndrome (PSST-A), loneliness (UCLA Short Form), school connectedness, period poverty, menstrual practices (MPNS), and menstrual attitudes (MAQ), along with a semi-structured questionnaire on menstrual stigma, cultural beliefs, and restrictions. Descriptive statistics and binary logistic regression identified psychosocial correlates of PMS, while qualitative responses were analysed thematically to understand sociocultural influences on menstrual experiences.

Results : Moderate-to-severe PMS affected 33.8% (95% CI: 29.4–38.2) of participants, while 14.5% (95% CI: 11.3–17.8) met the criteria for PMDD. Increasing age, school absenteeism, loneliness, and negative menstrual attitudes were associated with higher odds of PMS, whereas better menstrual practices were protective. Qualitative findings showed that menstrual stigma and restrictive cultural norms contributed to emotional distress, social withdrawal, and disrupted school participation.

Conclusion : PMS is a public health and gender equity issue that affects adolescents' mental well-being, education, and quality of life. Integrated, gender-responsive strategies should strengthen menstrual health literacy, reduce stigma, improve access to menstrual hygiene resources, and incorporate PMS screening and psychosocial support into school and adolescent health services. Future longitudinal studies are needed to clarify causal pathways linking psychosocial factors with PMS.

Key words : Premenstrual Syndrome Adolescent Health, Psychosocial Correlates, Menstrual Health, Gender Equality

Journal of Clinical and Biomedical Sciences

Health Management Information Systems for Mental Health Services in Kolar District: a quick appraisal

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Background : Health Management Information Systems (HMIS) are essential for evidence-based planning, service delivery, and monitoring of health programs. Strengthening HMIS is critical for achieving SDG 3, particularly in mental health services. This study assessed HMIS utilization in mental health care and explored implementation challenges in Kolar district, Karnataka.

Methods : The study conducted in Kolar district undertook quantitative analysis including secondary analysis of District Mental Health Programme (DMHP) data of Kolar from 2017–18 to 2025–26 to assess trends in mental health service utilization and disorder burden apart from desk review, direct observation, and in-depth interviews with 30 healthcare professionals across multiple levels of care.

Results : DMHP consultations increased by 76.3%, from 16,897 in 2017-18 to 29,781 in 2025-26, indicating improved service utilization and case detection. CMD (35.5%) and epilepsy (29.6%) contributed the highest burden, with suicide attempts showing an increasing trend. HMIS improved reporting, case tracking, and performance monitoring. Major barriers were poor interoperability and infrastructure limitations affecting timely reporting and data quality.

Conclusion : HMIS strengthened mental health service delivery and program monitoring in Kolar, supporting SDG 3. However, fragmented systems and infrastructure gaps remain key barriers. Limitations of HMIS data, including reporting delays, duplication, and variable data quality, may affect interpretation. Integrated digital platforms are needed to improve outcomes.

Key words : HMIS, Mental Health, DMHP, Digital Health, SDG 3

Journal of Clinical and Biomedical Sciences

Prevalence of Physical Nicotine Dependence and its Determinants among Tobacco Users in Urban Areas of Koppal

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Background : Tobacco use is a major preventable cause of death worldwide, claiming over 8 million lives annually. GATS-2 (2016–17) recorded 28.6% adult tobacco use in India, while NFHS-5 (2019–21) reported 38% of men and 9% of women as current users. Physical nicotine dependence, however, remains under-assessed at the community level, hindering targeted cessation strategies in urban populations.

Methods : METHODS: A six-month community-based cross-sectional study was conducted in the urban field practice area of KIMS, Koppal, among 300 randomly selected tobacco users aged ≥18 years, resident for ≥6 months (sample size based on WHO prevalence of 24.9%, 95% CI, 5% margin of error). Dependence was measured using the Fagerström Test for Nicotine Dependence (FTND), with scores >5 denoting high dependence. Chi-square tests and odds ratios (95% CI) assessed associations between usage patterns and dependence.

Results : Tobacco use began between 20–30 years in 45.7%, and 56% had used tobacco for 5–10 years. Roadside settings (47%) and tea shops (37.3%) were common use sites. On FTND, 58.7% found the morning cigarette hardest to forgo, 54% smoked more heavily within the first waking hour, and 53.3% struggled to abstain in restricted areas.

Conclusion : Urban tobacco users in Koppal showed notable physical nicotine dependence, especially morning craving patterns, with no single significant predictor identified. Integrating FTND-based screening, counselling, and pharmacotherapy into urban health services, alongside targeted interventions for young male initiators, is recommended.

Key words : Nicotine dependence, Tobacco, Fagerström Test.

Journal of Clinical and Biomedical Sciences

Exploring Lived Experiences of Family Support among Perinatal Women in Urban Bengaluru: A Qualitative Study

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Background : The perinatal period includes pregnancy and the first year postpartum and is crucial for maternal wellbeing. While quantitative studies link family support to improved outcomes, the lived experiences of support in urban Indian settings remain underexplored. This study examines perceptions and experiences of perinatal women and their families.

Methods : A qualitative study using in-depth interviews (IDIs) was conducted among perinatal women (pregnant and postpartum) and selected family members (spouses, mothers-in-law, natal mothers) in urban Bengaluru. Participants were recruited through purposive sampling from urban areas of Bengaluru attached to two Urban Primary Health Centres (UPHCs), namely NS Palya and Gottigere. Data saturation was achieved at (N=16). Interviews were conducted in participants preferred language, audio-recorded, transcribed verbatim, and analysed using Braun and Clarke's thematic analysis framework. Reporting followed COREQ guidelines.

Results : Six themes emerged from the study: emotional well-being through family support, spousal reassurance, practical caregiving, telephonic support, companionship, and loneliness due to caregiver absence. Family members described support as central to maternal wellbeing, shared caregiving roles, spousal involvement, and natal family support. Barriers included financial constraints, domestic violence, and negative social influences.

Conclusion : The findings reveal that family support during the perinatal period is a multidimensional experience encompassing emotional reassurance, practical caregiving, and companionship, while barriers such as caregiver absence, financial constraints, and domestic violence can compromise women's support systems. Integrating family-centred approaches into routine maternal health services and incorporating assessment of family support needs can strengthen supportive perinatal care.

Key words : Perinatal care, Family support, Maternal wellbeing, Qualitative research.

Journal of Clinical and Biomedical Sciences

Guardians of the Frontline: Transforming ASHAs and PHCOs into Community Antimicrobial Stewards

Author -Dr. Sunitha Chandrasekhar (sunithacsrinivas2020@gmail.com)

Background : Antimicrobial resistance (AMR) is growing quietly and rapidly, fueled by self-medication, incomplete treatment, and avoidable infections. ASHAs and PHCOs already support families through home visits, counselling, immunisation, TB referral, and hygiene promotion. This workshop explored how their everyday work can more intentionally support infection prevention and rational antibiotic use.

Methods : A 2-hour participatory workshop for 13 ASHAs and ANMs was organised under the theme, Frontline Health Workers as Champions for Infection Prevention and Rational Antibiotic Use. Using guided discussion, group exercises, role play, experience sharing, problem-solving, and action planning, the sessions helped participants identify the communicable disease work they already do, recognise best practices, and connect these to Antimicrobial Stewardship (AMS) and AMR prevention. Activities included daily work mapping, sharing successful examples, role plays on responding with behavior change communication and empathetic listening for antibiotic requests and non-adherence by patients, visualization with problem and solution trees, and community action planning with immediate commitments.

Results : Participants recognised how their routine work contributes to communicable disease prevention, handwashing promotion, immunisation, TB referral, diarrhea care, and avoiding self-medication. Role plays, small group discussions and experience exchanges improved their confidence in AMS advocacy. They identified trust building with patients, and practical counselling as strengths. Lack of time, incentives, IEC tools, and refresher training were identified as barriers to sustained AMS action.

Conclusion : Trust-based communication was seen as central to behaviour change. ASHAs and PHCOs can be strong community champions for integrating AMS concepts into routine field practice due to their proximity to the community. With practical tools, recognition, and system support, they can help reduce unnecessary antibiotic demand, improve treatment completion, and strengthen community-level AMR prevention.

Key words : ASHAs and PHCOs, Antimicrobial stewardship, community health champions, community-level AMR prevention

Journal of Clinical and Biomedical Sciences

Workload, Burnout and Associated Factors among Accredited Social Health Activists (ASHAs) in Hassan District: A Cross-Sectional Study

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Background : Limited evidence exists on how workload, incentives, and working conditions influence burnout and work outcomes among ASHAs. Addressing this knowledge gap is essential to inform policy reforms, strengthen frontline health systems, and support progress towards SDG 3c. This study assessed workload, burnout, job satisfaction, and associated factors among ASHAs in Hassan district.

Methods : A district-level cross-sectional analytical study was conducted among 131 of 1,443 ASHAs working in Hassan district, Karnataka, selected using stratified proportionate sampling across all eight taluks.. Data were collected using a structured questionnaire and one-to-one interviews in Kannada to assess socio-demographic characteristics, workload, occupational challenges, and job satisfaction, along with the Copenhagen Burnout Inventory. Data were analysed using SPSS version 23. Descriptive statistics were used to summarize study variables. Associations were assessed using Chi-square test/Fisher's exact test, independent t-test, one-way ANOVA, and post-hoc analysis. A p-value <0.05 was considered statistically significant.

Results : Among 131 ASHAs, mean personal, work-related, client-related and total burnout scores were 43.1±22.2, 30.5±15.7, 16.6±12.0 and 30.1±14.3, respectively. Moderate-to-high personal burnout was seen in 33.6%, while only 6.9% had moderate-to-high total burnout. Delayed incentive disbursement was significantly associated with higher total burnout. More working days per week were associated with higher personal and work-related burnout. No other significant associations were found.

Conclusion : Although overall burnout among ASHAs was low, a considerable proportion experienced personal burnout. Delayed incentive payments and increased weekly workload emerged as significant determinants of burnout. Strengthening financial support mechanisms, ensuring timely remuneration, and rationalizing workload may improve ASHA well-being, motivation, and the effectiveness of community health programmes.

Key words : ASHA workers , Burnout , Workload , Occupational health , Community Health Workers

Journal of Clinical and Biomedical Sciences

Knowledge and Symptom-Based Risk Assessment of Polyendocrine Metabolic Ovarian Syndrome Among Urban & Rural College Girls in Mysuru District

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Background : Polyendocrine Metabolic Ovarian Syndrome (PMOS), formerly Polycystic Ovary Syndrome (PCOS), is a common endocrine disorder among women of reproductive age. Early awareness and symptom recognition are essential to prevent long-term metabolic and reproductive complications. This study assessed knowledge and symptom-based risk factors of PMOS among urban & rural college-going women in Mysuru district.

Methods : A community-based cross-sectional comparative study was conducted among 422 college-going girls. Data were collected using a pre-tested structured questionnaire covering socio-demographic details, menstrual and clinical characteristics, lifestyle behaviors, and PMOS knowledge. Knowledge scores were categorized into good and poor. Data were analysed using descriptive statistics and chi-square/Fisher's exact tests to determine associations.

Results : Urban participants reported higher prevalence of medically diagnosed PCOS/PMOS (7.2%). Overall, PMOS knowledge were significantly higher among urban participants, with 45.5% demonstrating good knowledge compared to 28.8% in rural areas. Complete absence of periods (6.2%), Partial absence of periods (12.5%), Hirsutism (30%) were noted more among rural girls.

Conclusion : A substantial urban–rural disparity exists in awareness PMOS and its associated lifestyle determinants. Integrating reproductive health education and promoting healthy lifestyle modifications are the need of the hour to enhance awareness, encourage early recognition of symptoms, and reduce the risk of PMOS among girls.

Key words : Polycystic Ovary Syndrome, Polyendocrine Metabolic Ovarian Syndrome, Menstrual health, Periods.

Journal of Clinical and Biomedical Sciences

First Encounters with Adopted Families: An Assessment of the Experiences of Phase I MBBS Student

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Background : The first family visit during the Family adoption program signifies an important learning experience that shapes students' understanding of the social determinants of health, communication skills, and professional attitudes. Hence this study was done to assess the experiences of Phase I MBBS students during their first encounter with adopted families.

Methods : A cross-sectional descriptive study was conducted among Phase I MBBS students participating in the Family Adoption Program. Self-administered pretested semi-structured questionnaire was prepared in google form and was distributed after their first visit to their adopted families. Data was entered in Microsoft excelsheet and Results obtained were analysed with relevant statistical measures.

Results : Nearly 82.3% understood the objectives of the program and 81.7% reported that the visit helped them relate classroom learning to real-life situations. Approximately 76% felt adequately oriented before the visit and 70.3% believed faculty guidance prepared them for community interaction. 84.6% mentioned that the visit enhanced empathy towards families and 91.4% opined that visit strengthened students' sense of responsibility as future doctors. **Conclusion** : Although many students(52%) experienced initial anxiety, the overall experience was perceived positively and enhanced their confidence(81.1%) and prior faculty guidance was helpful(70.3%). Strengthening pre-visit orientation, communication training, and continuous faculty mentorship can improve students' preparedness and maximize the educational impact of the program.

Key words : Family adoption Program, Phas I MBBS students, First encounter

Journal of Clinical and Biomedical Sciences

Title of the Abstract - Awareness and effectiveness of Health education on KAP of Pre-exposure prophylaxis against rabies among high-risk individuals .

Author - Rachana AR

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Background : WHO recommends PrEP for individuals at high risk. These include sub-populations in highly endemic settings with limited access to timely and adequate PEP, individuals at occupational risk, and travelers who may be at risk of exposure. In this regard study planned to assess effectiveness of health education on knowledge, attitude and practice regarding PrEP for rabies among high risk subjects.

Methods : A quasi-experimental one-group pretest-posttest study was conducted among high-risk occupational groups for rabies, including postmen, delivery personnell working in the coastal city. A total of 30 participants were included using complete enumeration from the accessible study population. After obtaining IEC approval, permission from the respective offices and written informed consent, baseline data on socio-demographic characteristics, knowledge and practices regarding rabies, post-exposure prophylaxis (PEP) and pre-exposure prophylaxis (PrEP) were collected using questionnaire. A structured health education session on rabies prevention was conducted, followed by a posttest using the same questionnaire. Data were analysed using descriptive statistics, paired t-test and Chi-square test,

Results : Among 30 participants, knowledge regarding rabies improved significantly following the health education intervention. Awareness of rabies, its transmission, symptoms, prevention, post-exposure prophylaxis (PEP), and appropriate dog-bite management increased to nearly 100% in the post-test. Correct knowledge of the intradermal PEP route also improved markedly. Although willingness to receive pre-exposure prophylaxis (PrEP) increased modestly, none had previously received PrEP.

Journal of Clinical and Biomedical Sciences

Knowledge, Attitude, and Preventive Practices on Heat Stroke and Heat-Related Illnesses Among Outdoor Workers: A Community-Based Study

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Background : Heat stroke and other heat-related illnesses are important occupational health problems among outdoor workers, especially in areas with high environmental temperatures. Assessing knowledge, attitude and preventive practices is essential for planning effective preventive interventions.

Methods : A community-based cross-sectional study was conducted among 100 outdoor workers in the urban field practice area of a private medical college, Kalaburagi. Data were collected using a pre-tested structured questionnaire. Data were entered in Microsoft Excel and analyzed using SPSS(R Software). Descriptive statistics were expressed as frequencies and percentages. Chi-square test was used to determine the association between knowledge and selected variables. A p-value <0.05 was considered statistically significant.

Results : The study demonstrated varying levels of knowledge regarding heat stroke and heat-related illnesses. Most participants showed a positive attitude towards preventive measures and reported adopting common preventive practices such as adequate hydration and seeking shade during extreme heat. Chi-square analysis showed no statistically significant association between educational status and knowledge ($\chi^2 = 3.898$, df = 4, p = 0.420).

Conclusion : Although awareness regarding heat-related illnesses was satisfactory among many participants, important knowledge gaps and inconsistent preventive practices were identified. Periodic health education, workplace awareness programmes, adequate drinking water, rest breaks and protective measures are recommended to reduce heat-related illnesses among outdoor workers.

Key words : Heat stroke,Heat-related illnesses,attitude.

Journal of Clinical and Biomedical Sciences

Distracted on the Move: Mobile Phone Use While Driving and Risk-Taking Behaviour Among MBBS 1st Year Students of a M R Medical college, Kalaburagi.

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Background : Mobile phone use while driving is an emerging public health concern among young drivers.This study assesses the prevalence of mobile phone use while driving, risk-taking behaviour and determine the association between mobile phone use and risk-taking behaviour among MBBS first-year students.

Methods : A cross-sectional study was carried out from feb to march 2026. The study population comprised first-year MBBS students of M.R. Medical College, Kalaburagi, who drove two-wheelers and/or four-wheelers. A total of 120 participants were selected by simple random sampling. Data were collected using a predesigned, pretested, semi-structured questionnaire. Descriptive statistics were used to summarize prevalence and risk behaviours and the chi-square test was used to assess associations.

Results : Mobile phone use while driving was observed among 67.5% students. Common risky behaviours included driving without seatbelt, unsafe driving, and exceeding speed limits. The association between mobile phone use and risk-taking behavior was evaluated using Chi-square test(χ^2=9.81, P=0.002) and was found to be stastistically significant.

Conclusion : Mobile phone use while driving was highly prevalent among MBBS students and was significantly associated with risk-taking behaviors. Common unsafe practices included not wearing seatbelts, unsafe driving, and overspeeding. Strengthening road safety education and promoting behavioral change are essential to reduce distracted driving and prevent accidents.

Key words: Cooking oil reuse, Health literacy, Household practices, Reheated oil, Food safety.

Abstracts of Poster presentation

Journal of Clinical and Biomedical Sciences

Psychological Morbidity & Quality of Life Among Patients with Head and Neck Cancer in a Rural Tertiary Care Hospital in Kolar—A Cross-Sectional Study

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Background : Head and neck cancer is frequently associated with anxiety, depression and impaired quality of life. Knowledge Gap: Rural Indian data on psychological morbidity are limited. Rationale: Early identification may improve cancer care. Objectives: To determine the severity of anxiety and depression, correlate them with sociodemographic and clinical factors, and assess their impact on quality of life.

Methods : A hospital-based cross-sectional study was conducted among 120 histopathologically confirmed patients with head and neck cancer attending a rural tertiary care hospital in Kolar. Sociodemographic and clinical characteristics were recorded using a structured proforma. Anxiety, depression and quality of life were assessed using the Hamilton Anxiety Rating Scale (HAM-A), Hamilton Depression Rating Scale (HAM-D) and EORTC QLQ-C30 questionnaire. Data were analysed using descriptive statistics, Chi-square test, Pearson correlation, one-way ANOVA and multivariable logistic regression to evaluate associations and identify independent determinants of severe psychological morbidity. Statistical significance was set at $p<0.05$.

Results : Among 120 patients, 55.8% and 53.3% had moderate-to-severe anxiety and depression, respectively, while 45% reported poor quality of life. Anxiety increased with advancing cancer stage ($p=0.004$). Poor quality of life (OR=4.12), Stage IV disease (OR=3.21), tobacco use (OR=2.74) and combined treatment (OR=2.38) predicted severe anxiety, while poor quality of life predicted severe depression (OR=3.76). Anxiety and depression were negatively correlated with quality of life ($p<0.001$).

Conclusion : Psychological morbidity among patients with head and neck cancer extends beyond symptom prevalence and is strongly influenced by disease stage, tobacco exposure, treatment intensity and quality of life. Routine psychological screening using validated tools should be integrated into multidisciplinary oncology care, particularly in rural tertiary settings, to enable early identification and timely psychosocial intervention.

Key words : Head and Neck Cancer, Psychological Morbidity, Anxiety, Depression, Quality of Life.

Journal of Clinical and Biomedical Sciences

Assessment of Household Waste Management Practices in South Indian Villages

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Background : Household waste management is a major public health and environmental concern in rural South India. This study assesses awareness regarding waste management and environmental health, evaluates household waste generation, segregation, storage and disposal practices, and suggests sustainable strategies to improve waste management and village sanitation.

Methods : A community-based cross-sectional study was conducted in the field practice area of Adichunchanagiri Institute of Medical Sciences, comprising six villages (Kanchanahalli, Chunchanahalli, Kuchahalli, Haralahalli, Kodihalli, and Doddanahalli) to assess household waste management practices. Data were collected from households using a pre-tested structured questionnaire through face to face interviews. Information regarding waste generation, segregation, storage, collection, and disposal practices was gathered. The collected data were compiled and analyzed using descriptive statistics, and the findings were presented as frequencies and percentages. Sample size: purposive sampling (villages of field practice area). Analysis methods: Appropriate statistical tests, along with tests of significance.

Results : A total of 153 participants were included in the study. The mean age of participants was predominantly 41–60 years (36.8%), and 58.9% were females. Most participants were homemakers (41.4%) and had no formal education (40.1%). Regarding awareness, 68.0% were aware of waste segregation, 69.0% knew that improper waste disposal causes diseases, and 71.0% believed that proper waste management protects the environment, whereas only 24.0% knew the colour coding of waste bins. Most households (65.8%) used a single waste bin, and 88.0% stored waste in uncovered bins. Open dumping was the most common method of waste disposal (60.1%), followed by burning (18.3%) and composting (11.8%). Lack of waste collection services was reported as the major challenge by 51.0% of participants. Overall, despite moderate awareness regarding household waste management, scientific waste management practices remained inadequate among the study population.

Conclusion : The study is ongoing & the results will be presented during the conference deliberations.

Key words : Household Waste Management, Waste Segregation, Rural Villages, Environmental Pollution, Composting.

Journal of Clinical and Biomedical Sciences

ASSESSMENT OF KNOWLEDGE, ATTITUDE AND PRACTICE OF FAMILY PLANNING AMONG MARRIED WOMEN IN THE URBAN FIELD PRACTICE AREA OF A MEDICAL COLLEGE KALABURAGI

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Background : Family planning is a critical public health intervention that reduces maternal & infant mortality and promotes reproductive well-being. Despite national programs, a gap persists between awareness & contraceptive practice in urban communities. This study assesses knowledge, attitude & practice of family planning and identifies socio-demographic factors among married women of reproductive age group.

Methods : This cross-sectional study was carried out from April to May 2026 in Rajapur, the urban field practice area of Mahadevappa Rampure Medical College, Kalaburagi. The study population comprised married women of reproductive age group (18-49 years) and a total of 100 participants were selected through simple random sampling. Data were collected using a predesigned, pretested and semi-structured questionnaire. Statistical analysis was performed using SPSS version 25.0, with the level of significance set at $p<0.05$.

Results : Among 100 participants, 79% had heard of family planning and 78% knew at least one contraceptive method. Positive attitude was high: 91% considered husband's support important and 89% believed family planning improves maternal and child health. However, contraceptive prevalence was only 45%. Condoms (71.1%) were the most common method, followed by tubectomy (60%) and OCPs (37.8%). Desire for another child, lack of knowledge and husband/family opposition were the main reasons for non-use.

Conclusion : Adequate awareness but a significant gap in contraceptive practice was observed, with CPR of 43% below the national average. Despite positive attitudes, desire for more children, lack of knowledge and family opposition remain key barriers. Targeted health education, community counselling and male partner involvement are essential to improve family planning uptake and reproductive health outcomes.

Key words : Knowledge, Attitude, Contraceptive Prevalence Rate.

Journal of Clinical and Biomedical Sciences

ASSESSING THE PERCEIVED IMPACT AND BARRIERS OF THE FAMILY ADOPTION PROGRAM AMONG UNDERGRADUATE MEDICAL STUDENTS: A CROSS-SECTIONAL STUDY

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Background : Objectives of the study: To assess the perceived impact of the Family Adoption Program on communication skills, empathy, and understanding of social determinants of health. To identify challenges faced by students during implementation of the Family Adoption Program.

Methods : Study design: Institution based Cross sectional study. Source of data: Undergraduate medical students of various semesters studying in Raichur Institute of Medical Sciences. Study period: 2 months. Sample size: All the students of MBBS studying in RIMS, Raichur will be included in the study. Around 650 students are studying currently in RIMS. Undergraduate medical students who are willing to participate in the study will be included in the study. Method of collection of data: After obtaining informed oral consent, predesigned semi-structured questionnaire will be distributed to students of the institute who are in various semesters. Statistical analysis: Statistical analysis will be done using SPSS software. Means and standard deviations will be calculated for various variables.

Results : A total of 585 undergraduate medical students participated in the study, with a mean age of 20.79±1.44 years; 58.1% were males and 58.8% had completed more than eight Family Adoption Program (FAP) visits. Communication skills (57.6%) emerged as the most commonly perceived benefit, while 94.9% believed that the program would be beneficial in their future clinical practice. Family cooperation (61.2%) was identified as the major barrier.

Conclusion : The Family Adoption Program is perceived as an effective community-based learning strategy that enhanced students' communication skills, empathy, confidence, understanding of social determinants of health, and preventive healthcare. Although family cooperation was the main challenge, most students believed the program would benefit their future clinical practice. Strengthening implementation and addressing operational barriers can further improve its educational impact.

Key words : FAP, NMC, CBME, BARRIERS, EMPATHY.

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FACILITATORS AND BARRIERS TO EXCLUSIVE BREASTFEEDING PRACTICES AMONG MOTHERS IN BENGALURU FROM A SOCIO ECOLOGICAL PERSPECTIVE: A QUALITATIVE STUDY

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Background : Breastfeeding is vital for child survival, growth, and development. Despite its benefits, exclusive breastfeeding (EBF) remains suboptimal, with NFHS-6 reporting a prevalence of 55.8% in India and 61.6% in Karnataka. This study explored the barriers and facilitators influencing EBF among mothers in Bengaluru using a socio-ecological perspective.

Methods : A qualitative study was conducted among mothers of infants, community health workers, and key stakeholders in Bengaluru. Data were collected through four focus group discussions (FGDs) with mothers (6-8 participants each), two FGDs with community health workers, two in-depth interviews with mothers-in-law, and four key informant interviews with a paediatrician, a lactation consultant, and two state-level programme officers. A flexible interview guide was iteratively refined based on emerging findings. Data collection continued until thematic saturation was achieved. Data were analysed using a hybrid inductive-deductive thematic approach guided by the Socio-Ecological Model.

Results : Thematic analysis identified barriers and facilitators to exclusive breastfeeding across socio-ecological levels. The strongest facilitator was mothers' belief that breast milk is the best nutrition for infants. Family support, community health worker counselling, and supportive policies promoted EBF. Barriers included myths and misconceptions, perceived insufficient milk supply, financial constraints, informal-sector employment, and hospital-initiated formula supplementation.

Conclusion : Exclusive breastfeeding is influenced by factors operating across multiple socio-ecological levels. Strengthening antenatal and postnatal breastfeeding education, involving family members in counselling, building the capacity of healthcare providers and community health workers, promoting Baby-Friendly Hospital practices, and expanding maternity protection for mothers, particularly in the informal sector, may improve exclusive breastfeeding practices.

Key words : Exclusive breastfeeding, Qualitative study, Socio-ecological perspective.

Journal of Clinical and Biomedical Sciences

RELATIONSHIP BETWEEN HANDGRIP STRENGTH AND FUNCTIONAL INDEPENDENCE AMONG OLDER ADULTS: A COMMUNITY-BASED CROSS SECTIONAL STUDY

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Background : Declining handgrip strength may contribute to functional dependence in older adults. This study aims to determine the relationship between handgrip strength and functional independence, assess the correlation between handgrip strength and Katz ADL score, and identify predictors of functional dependence among community-dwelling older adults.

Methods : A community-based cross-sectional study was conducted among 300 adults aged ≥60 years residing in the urban field practice area of a medical college in Mysuru from July to October 2025 using purposive sampling. Data on sociodemographic characteristics and living arrangements were collected using a semi-structured questionnaire. Handgrip strength was measured using a hand-held dynamometer and functional independence was assessed using the Katz Index of Activities of Daily Living (ADL). Descriptive statistics were used to summarize the data. Spearman's correlation, Chi-square test and binary logistic regression were performed to determine the relationship between handgrip strength and functional dependence. A p value of <0.05 was considered statistically significant.

Results : Among 300 older adults (mean age: 67.4±8.7 years), 84.7% had weak handgrip strength. Handgrip strength showed a significant positive correlation with Katz ADL score ($r=0.265$, $p<0.001$), indicating better functional independence with higher grip strength. Handgrip strength was also negatively correlated with SARC-F score ($r=-0.248$, $p<0.001$). Weak handgrip strength was significantly associated with female sex ($p=0.008$).

Conclusion : Handgrip strength was positively associated with functional independence among older adults, suggesting its potential utility as a simple marker of functional status. Routine assessment of handgrip strength at the primary care level may facilitate early identification of older adults at risk of functional dependence and enable timely interventions to promote healthy ageing and preserve independence.

Key words : Handgrip strength, Functional dependence, Katz ADL, Older adults, Community-based study.

OCCUPATIONAL NOISE EXPOSURE, HEARING LOSS AND BLOOD PRESSURE STATUS AMONG CONSTRUCTION WORKERS IN BANGALORE

Journal of Clinical and Biomedical Sciences

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Background : Occupational noise exposure is a major hazard among construction workers and may result in both auditory and non-auditory health effects. Evidence regarding noise exposure, hearing impairment and blood pressure status among construction workers in India remains limited. This study aimed to assess noise exposure and its correlates among construction workers in Bangalore, South India.

Methods : A cross-sectional study was conducted among 55 construction workers in Bangalore. Data were collected using a structured questionnaire and a validated noise screening tool. Noise levels at different workstations were measured using a validated sound level meter application. Hearing assessment was performed using tuning fork tests and blood pressure was recorded using standard procedures. Descriptive statistics were used for analysis. Inferential statistics like chi-square test and student t test will be used. P value less than 0.05 will be considered as significant.

Results : The mean age of participants was 32.0±8.9 years. Daily exposure to loud noise was reported by 52.7% of workers, while 36.4% were classified as high-risk based on noise exposure scores. Noise levels ranged from 85 dB to 97 dB across work areas, with the highest levels observed during wall drilling activities. Sensorineural hearing loss was identified in 14.5% of workers and conductive hearing loss in 1.8%. Prehypertension was observed in 65.5% of participants, while 9.1% had hypertension.

Conclusion : Construction workers in Bangalore experience substantial occupational noise exposure with evidence of hearing impairment and elevated blood pressure levels. Strengthening workplace hearing conservation programmes, improving personal protective equipment usage and implementing regular occupational health screening are recommended to reduce adverse health outcomes.

Key words : Noise Exposure, Construction Workers, Occupational Health, Noise-Induced Hearing Loss (NIHL), Blood Pressure.

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COMPARISON BETWEEN CHILDHOOD AND ADULT TUBERCULOSIS IN GADAG DISTRICT TUBERCULOSIS CENTRE- A RETROSPECTIVE STUDY

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Background : Prevalence of childhood TB has been reported to be between 3% and 25% in different countries. It remains under reported in developing countries like India due to diagnostic difficulties and poor reporting and recording system. Objectives: 1. To compare the differences between adult and pediatric TB in terms of disease type, category and outcome of treatment. 2. To determine whether childhood TB was an important predictor of adverse outcome following treatment under the RNTCP.

Methods : Study design: retrospective record based study. Study area: This record based study was done at District Tuberculosis center in Gadag. Sample Size: All the TB cases from 2025 January to December 2025 of all age groups, which were registered in the district TB Centre, were selected. There were totally 605 patients registered.

Results : Out of total 605 tuberculosis patients, 549(90.7%) were adults and 56(9.3%) were pediatric. In adult age group 394(71.8%) were males and 155(28.2%) females. Among the pediatric age group, 35(62.5%) were males and 21(37.5%) were females. Pediatric age group had 53(94.65%) cases under pulmonary disease type and 3(5.4%) were extra pulmonary. Similarly in adults 476(86.7%) were pulmonary and 77(14.1%) extra pulmonary tuberculosis. This difference was statistically significant (P 0.043). All pediatric age group were treated under category 1, while among the adults 476(86.7%) were treated under category 1.

Conclusion : There were differences in the clinical presentation of TB among children and adults. In case of treatment outcomes, pediatrics age group had better outcome than adults.

Key words : Childhood, Tuberculosis.

Journal of Clinical and Biomedical Sciences

ECONOMIC BURDEN AND HEALTH RELATED QUALITY OF LIFE AMONG PATIENTS WITH MENTAL ILLNESS IN BENGALURU URBAN DISTRICT

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Background : Mental illnesses in India have major social and economic consequences. High medication costs and productivity losses increase economic burden and affect quality of life. Despite a 10.6% prevalence, public mental health spending in India is only 0.5% of total health expenditure. This study assessed mental healthcare costs and quality of life of patients from rural areas of Bengaluru Urban district.

Methods : A prospective study assessing cost of illness was conducted among 130 patients with mental illness aged >18 years, residing in Sarjapur PHC area of Bengaluru urban district. A patient perspective costing was done using a modified version of Tuberculosis Patient Cost Survey Instrument and a patient cost diary with visits at baseline, 6 months and at 1 year. Health related quality of life and medication adherence were assessed using EQ-5D-5L instrument (score range: 0-100) and Medication Adherence Rating Scale respectively at the end of 1 year. The data was analyzed using IBM SPSS software version 21. The outcome variable studied was cost of illness per patient per year, assessed using the direct and indirect costs approach. The analysis comprised of descriptives and linear regression.

Results : There was 130 person-years of follow-up in our study. The mean age of participants was 50.4±14.97 years. Most [98(75.4%)] were women and 69 (53%) were literate. Financial constraints delayed health-seeking in 18.5% of participants. The median annual cost of care for mental illness was INR 5,043.50 (IQR: 2,544.50-15,848.50) while 43(33%) incurred catastrophic health expenditure. The mean Visual Analogue Scale score was 58.39±22.45. Pain/discomfort was the most reported problem, [98(77.2%)].

Conclusion : Our study provides valuable information on the cost of mental health care in patients from rural areas and the quality of life of these participants. Community-based management of mental illness can lower the costs of mental illness by decreasing the indirect costs. Social protection measures and low-cost interventions that improve quality of life in patients with mental illness, is essential.

Key words : Cost of illness, Economic burden, India, Mental illness, Quality of life.

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TRENDS IN CANCER BURDEN AND TOBACCO USE IN INDIA (2018-2025): A MULTI-YEAR EPIDEMIOLOGICAL AND INFRASTRUCTURAL ASSESSMENT

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Background : India is experiencing an epidemiological transition, with cancer emerging as a major NCD. Approximately 2.5 million people live with cancer, with over 700,000 new cases annually. Tobacco-related cancers remain highly prevalent, making trend analysis essential for policy planning.

Methods : A descriptive secondary-data analysis was conducted using National Cancer Registry Programme estimates, NPCDCS reports, NFHS-5, and GATS India data covering all states and Union Territories. Descriptive statistics and trend analyses were performed using Excel and Python.

Results : Cancer cases increased from 1.15 million (2018) to 1.53 million (2024), with deaths rising from 784,821 to 916,827. Female cases exceeded male cases in 2024. Breast, cervical, lung, and oral cancers showed increasing trends. Uttar Pradesh had the highest cancer burden. Regional Cancer Centres increased from 27 to 62 and CHC nodal clinics from 204 to 6,359, while district NCD clinics remained stable. Tobacco use was highest in Mizoram and lowest in Kerala.

Conclusion : India's cancer burden continues to rise, with significant geographic and gender variations linked to tobacco use. Despite substantial expansion of NCD infrastructure, uneven district-level coverage persists. Strengthening early detection, tobacco cessation, and equitable infrastructure development is crucial to reduce cancer morbidity and mortality.

Key words : Cancer burden, Cancer mortality, NCDs, Tobacco use, Cancer trends.

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RISK PERCEPTION, HOUSEHOLD PRACTICES AND HEALTH LITERACY ON REUSE OF COOKING OIL AMONG ADULTS IN URBAN FIELD PRACTICE AREA OF M.R. MEDICAL COLLEGE

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Background : Repeated reuse of cooking oil is common in many developing countries and may generate toxic compounds linked to cardiovascular diseases and cancer. This study assesses household oil reuse practices, evaluates health literacy on its health risks and examines the association between health literacy and reuse practices among adults in the urban field practice area of M.R. Medical College, Kalaburagi.

Methods : A community-based cross-sectional study was carried out from April to May 2026 in the urban field practice area of M.R. Medical College, Kalaburagi. The study population comprised adults aged above 18 years who were involved in household cooking practices and a total of 100 participants were selected through simple random sampling. Data were collected using a pre-tested, pre-structured questionnaire. Descriptive statistics were used to summarize the findings and the Chi-square test was applied to determine the association between health literacy and household practices.

Results : Among 100 participants, 46% had poor health literacy, 40% had moderate health literacy and 14% had good health literacy regarding reuse of cooking oil. Reuse of cooking oil after frying was a common household practice. A statistically significant association was observed between health literacy and household practices related to cooking oil reuse (χ^2=17.39, p<0.001). Participants with higher health literacy were more likely to adopt healthier cooking practices.

Conclusion : Health literacy significantly influences household practices regarding reuse of cooking oil. Improving health literacy can improve the misuse of reheated cooking oil.

Key words : Cooking oil reuse, Health literacy, Household practices, Reheated oil, Food safety.

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KNOWLEDGE REGARDING ORGAN DONATION AMONG ADULTS IN THE URBAN FIELD PRACTICE AREA OF A PRIVATE MEDICAL COLLEGE, KALABURAGI: A CROSS-SECTIONAL STUDY

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Background : Organ donation is a life-saving intervention for patients with end-stage organ failure. Despite advances in transplantation, the shortage of organ donors remains a major public health challenge in India. Assessing public knowledge regarding organ donation is essential for planning effective awareness programs and improving donation rates.

Methods : A community-based cross-sectional study was conducted among 120 adults. Data were collected using a pre-tested structured questionnaire. Descriptive statistics and Chi-square test were used; $p<0.05$ was considered significant.

Results : The mean age was 43.0±14.4 years, with equal numbers of males and females. Knowledge was high regarding legal permission for organ donation (96.7%), family consent (99.2%), organ donation after death (91.7%), living donation (89.2%), eye donation (88.3%), and brain death (86.7%). Overall, 79.2% achieved the highest knowledge score. No statistically significant association was observed between knowledge scores and sex, education, socioeconomic status, marital status, or occupation ($p>0.05$).

Conclusion : Most adults had good knowledge regarding organ donation. Continued community awareness programmes are recommended to strengthen knowledge, dispel misconceptions, and encourage organ donation.

Key words : Organ donation, Knowledge, Adults, Community.

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A RANDOMIZED CONTROLLED STUDY ON THE SAFETY OF MABS FOR POST EXPOSURE PROPHYLAXIS IN SUSPECTED RABIES EXPOSURES AT THE ANTI-RABIES CLINIC

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Background : Rabies is 100% preventable with PEP: wound washing, anti-rabies vaccination, and wound infiltration with immunoglobulin (RIG) or monoclonal antibody (mAb). Recombinant mAbs show superiority over HRIG/ERIG in availability, safety and purity; WHO recommends them as RIG alternatives. India pioneered two mAb products. Objectives: (1) Assess mAb safety for PEP. (2) Compare single vs cocktail mAb safety.

Methods : A randomized controlled study was conducted at the anti-rabies clinic including 100 patients with category III animal exposures; randomized into two arms: one received single mAb and the other received cocktail of two mAbs, along with full course of anti-rabies vaccination as per NCDC guidelines. All the subjects were followed up for any immediate or delayed adverse events (AEs) up to day 28 (PEP vaccination course).

Results : Among the study subjects, majority (78%) were adults. The present study showed that, 12 subjects reported a total of 21 adverse events in the single mAb arm and 15 subjects reported 28 adverse events in the cocktail of two mAbs arm. All the adverse events in both groups were mild in nature and resolved without complications. Statistical comparison revealed no significant difference in adverse events between the two groups (p=0.653).

Conclusion : The presently available rabies monoclonal antibodies are safe and clinically well-tolerated for post exposure prophylaxis. This support wider adoption of mAbs as a safer alternative to conventional rabies immunoglobulin.

Key words : rabies, post exposure prophylaxis, monoclonal antibody, safety.

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TRAINING ADEQUACY AMONG ACCREDITED SOCIAL HEALTH ACTIVISTS (ASHAS) IN HASSAN DISTRICT: A CROSS-SECTIONAL STUDY

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Background : ASHAs are key frontline health workers delivering essential community-based healthcare services. Adequate knowledge, skills, and decision-making abilities are crucial for effective service delivery. However, evidence on competency-based assessment of ASHA training adequacy and its association with burnout remains limited. This study assessed training adequacy among ASHAs in Hassan district.

Methods : A district-level cross-sectional analytical study was conducted among 131 of 1,443 ASHAs working in Hassan district, Karnataka, selected using stratified proportionate sampling across all eight taluks. Training adequacy was assessed using a structured competency-based questionnaire developed from ASHA training modules, covering cognitive, psychomotor, and affective domains. Domain scores and an overall training adequacy score (maximum score = 20) were computed. Percentile-based categorization was used to classify training adequacy levels. Data were analysed using SPSS version 23. Descriptive statistics were used to summarize scores, and Pearson correlation was used to assess associations with burnout scores.

Results : Among 131 ASHAs, mean cognitive, psychomotor, and affective scores were 5.76±1.07/7, 6.08±0.80/8, and 4.40±0.69/5 respectively. The mean overall training adequacy score was 16.23±1.67/20 (81.2%). Based on percentile-based categories, 32.8% demonstrated low, 44.3% moderate, and 22.9% high training adequacy. Training adequacy was not significantly correlated with personal, work-related, client-related, or total burnout scores ($p>0.05$).

Conclusion : Most ASHAs demonstrated moderate to high training adequacy, with highest scores in the affective domain. Training adequacy was not significantly associated with burnout, suggesting that factors beyond knowledge and skills may influence occupational well-being. Regular competency-based refresher training and periodic assessment may help strengthen frontline health service delivery.

Key words : ASHA workers, Training Adequacy, Competency Assessment, Community Health Workers, Primary Healthcare.

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INVESTIGATION OF ACUTE GASTROENTERITIS CASES AT A LARGE APARTMENT COMPLEX IN BANGALORE SOUTH

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Background : Acute Gastroenteritis (GE) is one of the most common causes of morbidity worldwide, particularly in developing countries. Urban residential complexes, with their high population density and shared water systems, present unique challenges for outbreak, prevention and control. There was a report of unusual increase in Acute Gastroenteritis cases at a large apartment complex in South Bengaluru.

Methods : Apartment complex South Bengaluru. All residents in the apartment complex. November 2025 to January 2026. Descriptive study. Data was entered in excel and analyzed using jamovi 2.6.26 and results were expressed in descriptive statistics like frequency and percentages.

Results : The high attack rate (53.6%) among surveyed individuals indicates widespread exposure, with clustering across multiple buildings. The demographic distribution revealed that adults aged 19-59 years were most affected (63.5%), followed by elderly residents (19.1%). Females (57.1%) were more affected than males (42.9%).

Conclusion : The outbreak of AGE was due to poor maintenance of water systems from sumps to overhead tanks to household levels.

Key words : Acute GE(gastroenteritis), Probable case.

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Perceptions and Utilisation of Artificial Intelligence (AI) among Nursing Students in Kolar Taluk, Karnataka: A Cross-Sectional Study

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Background : Artificial intelligence (AI) is increasingly transforming healthcare and nursing education. Evidence on AI perceptions and utilisation among nursing students in Karnataka remains limited. This study assessed AI utilisation, perceptions based on the Technology Acceptance Model, associated factors, and students' experiences with AI in Kolar Taluk, Karnataka.

Methods : A mixed-methods cross-sectional study was conducted among 438 nursing students from five nursing colleges in Kolar Taluk, Karnataka. Quantitative data were collected using a structured questionnaire based on the Technology Acceptance Model through multistage stratified random sampling. Qualitative data were obtained through 19 semi-structured interviews of high and low AI users selected purposively. Quantitative data were analysed using descriptive statistics, Chi-square tests and Pearson correlation. Qualitative data were analysed using Braun and Clarke's thematic analysis.

Results : Most students demonstrated moderate AI utilisation (62.1%; mean=3.25/5). ChatGPT was the most used tool (90.2%), mainly for assignments (69.4%) and exam preparation (65.8%). Positive perceptions were reported by 91.6% of participants. Utilisation was associated with age (p=0.017) and year of study (p=0.044). Perception positively correlated with utilisation (r=0.351, p=0.001). Qualitative findings highlighted benefits, dependency concerns and faculty influence.

Conclusion : Nursing students showed highly positive perceptions but only moderate utilisation of AI, indicating a perception-utilisation gap. Structured AI literacy training, faculty guidance and institutional policies are recommended to promote responsible AI use in nursing education and strengthen future healthcare workforce preparedness.

Key words : Artificial Intelligence, Nursing Students, Technology Acceptance Model, AI Utilisation, Mixed Methods.

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ADULT TB VACCINE HESITANCY IN FIELD PRACTICE AREA OF A MEDICAL COLLEGE IN BENGALURU: A CROSS-SECTIONAL STUDY

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Background : Adult TB vaccination may reduce the burden of tuberculosis in India, but vaccine hesitancy could limit its uptake. Evidence on adult TB vaccine hesitancy is limited. This study aimed to assess the level of hesitancy, identify associated socio-demographic factors, and compare hesitancy between urban and rural populations.

Methods : A community-based cross-sectional study was conducted from September to November 2025 among 422 adults (≥18 years) in the field practice area. Participants were recruited through convenience sampling after obtaining informed consent. Data were collected using a semi-structured questionnaire and the adapted Adult TB Vaccine Hesitancy Scale (TB-aVHS). Data were analysed using EpiData software. Chi-square and t-tests tested associations, with $p<0.05$ considered significant.

Results : Nearly half of respondents reported hesitancy toward the adult TB vaccine. Major reasons included fear of side effects and mistrust of new vaccines. Rural residence and lower education levels were significantly associated with higher hesitancy scores ($p<0.05$).

Conclusion : Hesitancy toward the adult TB vaccine was common, mainly due to fear of side effects and concerns that new vaccines carry more risks than older vaccines. Targeted health education and community engagement are essential to improve vaccine acceptance.

Key words : Vaccine hesitancy, Tuberculosis, Adult immunization, Public health, Bengaluru.

Journal of Clinical and Biomedical Sciences

Epidemiological Trends of Major Vector-Borne Diseases at a Municipal Tertiary Care Hospital in Surat: A Facility Based Assessment

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Background : Vector-borne diseases (VBDs), particularly dengue and malaria, challenges an urban city like Surat with dense migrant population and tropical climate. This study analyses the trends of VBD. Objectives: To determine the five year (2021-2025) temporal and seasonal trends of dengue and malaria in a tertiary care hospital in Surat and to compare with Gujarat state and national benchmarks.

Methods : A facility-based descriptive retrospective observational study conducted at a municipal tertiary care hospital in Surat. Yearly and monthly reported data of registered diseases from January 2021-December 2025 were used. Descriptive statistics including the absolute counts, various percentages, and rates were calculated with the data obtained. Contextual comparison was made with NCVBDCP and Gujarat state published data. No inferential analysis was done due to the census nature of the institutional surveillance data.

Results : Total VBD cases rose 5.1-fold (2021-2024). Dengue rose 599% (peak: 2022 [612] and 2024 [692]). Malaria rose 578% and was Plasmodium vivax predominant (PV:PF ratio = 2 to 2.8:1). 56.4% of all VBD occurred in Monsoon season (June-September), with dominant peak month being September for Dengue, and August-September for Malaria. Malaria rate per 1000 OPD visits rose from 0.46 to 1.90 (2021-2024), against national declining Annual Parasite Index trend.

Conclusion : The data from the tertiary care hospital reveals an accelerating trend of Vector-borne diseases, especially a rise in malaria rate in contrast to the national decline of the Annual Parasite Index trend, probably due to the migrant ecology of Surat. Targeted integrated vector management, migrant screening, and pre-monsoon interventions are recommended.

Key words : Dengue, Malaria, Surat, Urban health.

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SELF CARE PRACTICES AMONG PEOPLE WITH TYPE II DIABETES MELLITUS IN A RURAL FIELD PRACTICE AREA OF CHAMARAJANAGAR INSTITUTE OF MEDICAL SCIENCES

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Background : Self-care practices are found to have an association with good glycemic control and thereby controlled incidence of micro and macrovascular complications. As the overwhelming majority of the day-to-day care activities in diabetes is handled by patients and their families there is an imminent need for reliable and valid measure of self-care practices of diabetes.

Methods : Cross sectional Study. Sample size: 106, Frequency, Chi square to find association between categories, Mann whitney test to find association between other variables.

Results : The study found that the prevalence of self care practices were very low. In my study the self care practices score above mean was taken as adequate and in 33 percent of study population it was found to be adequate.

Conclusion : Knowledge about self care should be increased and doctors treating Diabetes patients should emphasize the importance of Self Care along the patients.

Key words : Self, Care, Diabetes, blood glucose, prevalence.

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UTILIZATION OF INTEGRATED CHILD DEVELOPMENT SERVICES (ICDS) AMONG CHILDREN AGED 0-6 YEARS IN AN URBAN FIELD PRACTICE AREA OF BENGALURU

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Background : Undernutrition among children remains a major public health concern affecting growth and development. The Integrated Child Development Services (ICDS) programme provides nutrition, immunization, health check-ups, and preschool education through Anganwadi Centres. However, utilization in urban areas remains suboptimal, necessitating assessment of service uptake and associated factors.

Methods : A community-based cross-sectional study is being conducted among children aged 0-6 years residing in the urban field practice area under the Urban Health Training Centre (UHTC), Bengaluru. A total of 150 participants have been included so far using systematic random sampling as part of the ongoing study. Data were collected using a pretested semi-structured questionnaire covering sociodemographic characteristics, utilization of ICDS services, associated factors, reasons for non-utilization, and satisfaction levels. Data analysis was performed using SPSS version 23. Descriptive statistics were expressed as frequencies and proportions, and factors associated with utilization were assessed using Chi-square test.

Results : Among 150 children, overall ICDS utilization was 78.6%. Utilization of supplementary nutrition, immunization, health check-ups, and preschool education was 72.0%, 91.3%, 64.7%, and 68.5%, respectively. Mother's education and awareness were significantly associated with utilization ($p<0.05$). Overall, 81.3% beneficiaries reported satisfaction with ICDS services.

Conclusion : Utilization of ICDS services among children aged 0-6 years varied across service components and was influenced by socio-demographic and accessibility-related factors. Strengthening awareness, improving service quality, and addressing barriers to utilization may enhance uptake and beneficiary satisfaction, thereby contributing to better child health and nutritional outcomes.

Key words : ICDS, Undernutrition, Anganwadi Centres, Child Health, Service Utilization.

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PERCEPTION, APPREHENSION, AND ANXIETY REGARDING THE IMPACT OF ARTIFICIAL INTELLIGENCE ON MEDICAL SPECIALITIES AMONG POSTGRADUATE MEDICAL STUDENTS

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Background : AI is reshaping medicine, creating uncertainty among future physicians. This study aims to: (1) assess awareness, apprehension, and AI-related career anxiety among medical postgraduates; (2) determine the perceived vulnerability of selected specialties to automation and identify key AI concerns; and (3) assess the association between prior AI training and apprehension.

Methods : An institutional cross-sectional study was conducted among postgraduate medical students at Mysore Medical College and Research Institute (MMCRI), Mysuru. Universal sampling was adopted, wherein all eligible postgraduate students were invited to participate, and 122 completed responses were obtained. Data were collected using a pretested, structured questionnaire assessing awareness, apprehension, AI-related career anxiety, perceived vulnerability of five selected medical specialties to AI-driven automation, prior AI training, and preparedness for AI integration. Descriptive statistics summarized the data, and the association between prior AI training and apprehension levels was assessed using the Chi-square test. A p-value <0.05 was considered statistically significant.

Results : Among 122 postgraduate medical students, 62.3% were female and 48.4% were third-year residents. Formal AI training was reported by 25.4%. Overall awareness of AI was high, with 88.5% aware of current AI applications. Radiology (44.3%) was perceived as the specialty most vulnerable to AI, followed by Pathology (23.8%) and Dermatology (22.1%). Ethical issues (27.0%), diagnostic errors (27.0%), and data privacy (26.2%) were the leading concerns.

Conclusion : Postgraduate medical students demonstrated high awareness of AI, while Radiology was perceived as the specialty most vulnerable to AI. Ethical issues, diagnostic errors, and data privacy were the predominant concerns.

Key words : Artificial Intelligence, Medical education, Career anxiety, Perception, Apprehension.

Journal of Clinical and Biomedical Sciences

DIAGNOSTIC AND TREATMENT DELAYS AMONG TUBERCULOSIS PATIENTS: A CRITICAL GAP IN THE TB CARE CASCADE

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Background : Early diagnosis and prompt initiation of treatment are essential to interrupt transmission, improve treatment outcomes, and achieve national TB elimination goals. Delays occurring between symptom onset, diagnosis and treatment initiation contribute to continued transmission of infection and increased morbidity. To determine the proportion of diagnostic and treatment delays among TB patients.

Methods : A cross sectional study among 160 newly diagnosed individuals with pulmonary and extra-pulmonary tuberculosis from birth till 70 years of age registered under NTEP in UHTC, RHTC and tertiary care hospital of Shri Atal Bihari Vajpayee Medical College and Research Institute. Collected data was entered to Microsoft Excel analyzed using software for Windows, version 22.0 (IBM Corp., Armonk, NY, USA). Descriptive statistical analysis was performed to summarize the characteristics of the study population. Inferential statistical methods were used to determine associations between independent variables and outcome variables such as patient delay, diagnostic delay, and treatment delay using Chi square, Fisher exact test and Yates continuity correction as applied appropriately.

Results : 160 tuberculosis patients, 75 (46.9%) were aged 21-40 years, 80 (50.0%) were male, 117 (73.1%) were urban residents, and 79 (49.4%) belonged to the lower middle class. Pulmonary symptoms prompted healthcare seeking in 133 (83.1%) patients. Patient delay was <30 days in 137 (85.6%), diagnostic delay was <7 days in 106 (66.3%), confirmation delay was <30 days in 155 (96.9%), and treatment delay was <7 days in 122 (76.3%).

Conclusion : The study found that most tuberculosis patients sought care early and initiated treatment within recommended timelines, though a notable proportion experienced diagnostic and treatment delays. Thus, the study successfully determined the proportion of delays and identified key patient- and system-related factors associated with delayed diagnosis and treatment.

Key words : Pulmonary and extra-pulmonary tuberculosis, delay, field practice areas, proportion.

Journal of Clinical and Biomedical Sciences

National Scientific Conclave 2026

"Artificial Intelligence in Biomedical and Health Sciences – A Novel Approach"

6th & 7th February 2026, Research and Development Cell, SDUAHER, Tamaka, Kolar-563101

Abstracts of Invited speakers

Journal of Clinical and Biomedical Sciences

Basics of Artificial Intelligence, Machine Learning and Deep Learning: An Overview

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Abstract

Artificial Intelligence (AI), Machine learning (ML), and Deep Learning (DL) have revolutionized diverse sectors including science, health care, education, technology, financial modelling and marketing, while in certain applications exceeding human performance.1 This technological progress is often termed as fourth-industrial revolution and was possible due to increase computing capacity (GPU's). Although closely related and often used interchangeably, AI, ML, and DL represent distinct concepts, with ML and DL constituting subsets of AI (Figure 1). In the current age of big data, ML and DL have become popular because of their ability to learn from the past and make intelligent decisions. ML is a subfield of AI that allows the computers to performs tasks without explicit programming with development of algorithms and statistical tools. ML techniques can be classified into four types,

a) Supervised learning: The algorithms are trained using labelled data and the performance of the model was evaluated using test data

b) Unsupervised learning: In this approach the data is unlabelled and the aim is to find hidden structure in this data

c) Semi-Supervised learning: In this learning approach, both labeled and unlabelled data are used together to build a model for data classification.

d) Reinforcement learning is a behavioral learning approach in which an algorithm learns optimal actions through feedback from interactions, rather than being trained on labeled datasets

DL is branch of ML often applied in high-dimensional noisy, unstructured data commonly applied to pattern recognition systems. In our study we have applied ML models on microbial abundance data to predict the biomarkers that can be used to detect early-onset of colorectal cancer.2 In conclusion, AI is transforming multiple domains by enhancing efficiency, accuracy, and decision-making through intelligent, adaptive, and scalable computational systems

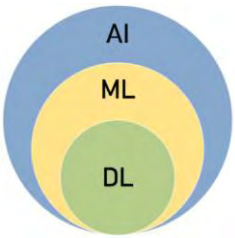


Figure 1: Relationship between AI, ML and DL.

Journal of Clinical and Biomedical Sciences

"Simplifying the Brain: On the Need for Reforms in Brain Theory"

V. Srinivasa Chakravarthy

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Abstract

This talk argues that contemporary neuroscience is caught in a "big data, tiny theory" regime: massive investment in descriptive measurement (from molecular to systems scales, including large connectomics efforts) has outpaced the development of explanatory, systems-level theories that reveal deep organizing principles. Using analogies from the history of science—astronomy's transition from epicycles and data accumulation (e.g., Tycho Brahe) to law-seeking paradigm shifts (e.g., Isaac Newton)—the presentation calls for a "Newtonian revolution" in brain science: the discovery of the right abstractions and universal constraints, rather than an ever-expanding catalog of parts. It critiques reductionism by emphasizing that engineering explanations typically operate at the appropriate abstraction level (a "radio architecture" rather than a parts list) and highlights dissatisfaction voiced by leading thinkers such as Patricia Churchland and V. S. Ramachandran regarding the scarcity of robust neural theories.

The talk frames this gap as clinically consequential, pointing to widely used interventions (e.g., vagal stimulation, lithium) whose mechanisms remain poorly understood, especially for multifactorial brain disorders. As a constructive agenda, it proposes building simplified whole-brain models guided by an explicit methodology—**SIMPLIFY, UNIFY, APPLY**—and illustrates this approach with example programs from the IIT Madras ecosystem: basal ganglia models of Parkinsonism, hippocampal navigation, oscillatory network theories, deep vision, and neurovascular coupling framed as a computation/constraint-matching problem.

Journal of Clinical and Biomedical Sciences

Applications of Artificial Intelligence in Radiodiagnosis: An Overview

Prof Dr Sudhir Kale
Lead Consultant and HOD Radiology President IRIA KSC, Aster CMI Hospital



Message

Artificial Intelligence (AI) is increasingly redefining the practice of radiodiagnosis by enhancing diagnostic accuracy, optimizing workflows, and supporting precision medicine. The exponential rise in imaging volumes, growing complexity of examinations, and demand for rapid, high-quality reporting have positioned AI as a valuable adjunct to radiologists. Advances in machine learning (ML) and deep learning (DL), particularly convolutional neural networks, have enabled meaningful clinical applications across the imaging spectrum.

One of the earliest and most impactful applications of AI is in **image acquisition and reconstruction**. AI-based techniques improve image quality by reducing noise, correcting motion artifacts, and enabling faster scans with lower radiation doses in CT and reduced acquisition times in MRI. In ultrasound, AI assists with automated image optimization and standardized plane acquisition, reducing operator dependency and improving reproducibility.

In **image interpretation**, AI systems aid in detection, characterization, and quantification of pathology. Advanced algorithms can identify subtle abnormalities such as pulmonary nodules, breast lesions, intracranial hemorrhage, ischemic stroke, and musculoskeletal injuries with high sensitivity. Automated organ segmentation, lesion volumetry, and quantitative analysis have become particularly valuable in oncologic imaging, facilitating accurate staging, treatment planning, and response assessment. These tools help reduce inter-observer variability and improve reporting consistency.

AI also plays a pivotal role in **radiomics and predictive analytics**, where quantitative imaging features are extracted and correlated with histopathological findings, molecular markers, and clinical outcomes. This enables non-invasive tumor characterization, prognostication, and personalized treatment strategies. Furthermore, AI-driven workflow solutions streamline radiology operations through automated protocol selection, prioritization of critical findings, structured reporting, and decision support, thereby reducing turnaround time and radiologist fatigue.

Despite its potential, the widespread adoption of AI in radiodiagnosis faces challenges including data quality issues, algorithm bias, lack of external validation, regulatory constraints, and medico-legal concerns. Ethical considerations related to data privacy, transparency, and accountability are equally important. Importantly, AI should be viewed as a supportive tool rather than a replacement for radiologists.

In conclusion, AI has the potential to transform radiodiagnosis by improving efficiency, accuracy, and patient-centered care. Thoughtful integration, continuous validation, and close collaboration between radiologists, technologists, and developers are essential for its successful and responsible clinical implementation.

Journal of Clinical and Biomedical Sciences

Multifractal Detrended Fluctuation Analysis and Persistent Homology of α-synuclein Aggregates Across Parkinson's Disease Stages

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Abstract

Background: α-Synuclein (α-syn) is a prominent protein associated with neurodegenerative conditions such as Parkinson's disease (PD), Dementia, and Multiple System Atrophy (MSA), and is a key player in synucleinopathies. Despite its significance, the specific changes in α-syn fibril conformations during the progression of PD remain a subject of uncertainty.

Objectives: This study investigates the structural alterations in α-syn aggregation from cerebrospinal Fluid (CSF) samples at different PD stages (pre-PD, mid-PD, and late-PD).

Methodology: In the present study, we used Multifractal Detrended Fluctuation Analysis (MFDFA) and persistent homology. The analysis involves constructing Protein Contact Networks (PCNs) for major and minor α-syn polymorphs. The subsequent application of MFDFA to Vertex Degree (VD), Vertex Clustering Coefficients (VCC), and Vertex Closeness Centrality (VCC) on this time series data reveals multifractal properties and scaling behaviors. Simultaneously, topological analyses, including Rips complexes, Alpha complexes, and Betti numbers, uncover essential structural features and connectivity patterns in α-syn networks.

Result: This study illuminates α-syn multifractal dynamics and topological characteristics, providing valuable insights into disease-related protein aggregation and network alterations in the progression of PD.

Conclusion: This study provides unique information on Multifractal Detrended Fluctuation Analysis and Persistent Homology of α-syn Aggregates across Disease Stages.

Keywords: MFDFA, Persistent Homology, Protein Contact Network, Rips-Complex, Betti Numbers, and Alpha Complex.

Journal of Clinical and Biomedical Sciences

Integrating AI in practice of Pathology and Lab Medicine

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Abstract

Artificial intelligence (AI) is increasingly influencing the practice of Pathology and Laboratory Medicine, not as a replacement for human expertise, but as a powerful tool to augment it. At its core, AI enables laboratories to improve workflow efficiency, minimize errors, and deliver results with greater speed and consistency. Importantly, AI should be viewed not as an end in itself, but as a means to achieve better clinical, operational, and patient-centred outcomes.

In laboratory medicine, AI applications can be broadly classified into four domains: diagnostic algorithms, technology enhancement, operational efficiency, and precision medicine. Diagnostic algorithms assist in pattern recognition and decision support across disciplines such as hematology, histopathology, biochemistry, and microbiology. Technology enhancement includes improvements in image acquisition, signal processing, and data interpretation. Operational efficiency gains are achieved through automation of pre-analytical, analytical, and post-analytical workflows, including sample tracking, quality control, and turnaround time optimization. Precision medicine leverages AI to integrate laboratory data with clinical and molecular information, enabling more individualized patient care.

AI has the potential to impact every aspect of laboratory operations, from specimen collection to result interpretation and reporting. However, effective integration requires a deep understanding of existing laboratory workflows. Without clearly defining the current process, AI risks being applied as a solution in search of a problem. Equally critical is the ability to ask the right questions—identifying where errors occur, where delays arise, and where human expertise can be meaningfully supported by algorithms.

This presentation will describe real-world applications of AI in Pathology and Laboratory Medicine, highlighting practical use cases, lessons learned, and the importance of thoughtful, workflow-aligned adoption for sustainable impact.

Journal of Clinical and Biomedical Sciences

AI in Nutrition : An Overview

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Abstract

The integration of artificial intelligence (AI) into nutritional practice and research represents a strategic shift from population-level dietary generalizations toward a paradigm of precision nutrition. Globally, poor diets contribute to an annual economic burden of approximately 8.1 trillion USD, driving the rapid adoption of machine learning and deep learning tools to manage chronic diseases. In India, this evolution is guided by national strategies for inclusive growth and the 2023 ethical guidelines for biomedical research, which emphasize patient autonomy, data privacy, and the "human-in-the-loop" concept to ensure clinical accountability.

The core utility of AI in this field spans several critical domains, including:

● **Precision Nutrition:** Decoding gene-diet interactions through nutrigenomics and metabolomics to tailor individual dietary regimes.

● **Dietary Assessment:** Replacing retrospective recall with real-time image recognition and motion-sensor tracking to improve nutrient estimation accuracy.

● **Clinical Operations:** Automating complex formula feed calculations and administrative claims processing via intelligent bots.

● **Public Health:** Utilizing predictive modelling for early malnutrition detection in resource-limited and underserved settings.

Core Technology	Functional Impact
Computer Vision	Automated nutrient estimation and volume recognition from images
Agentic AI	24/7 personalized coaching and autonomous behavioral monitoring
Digital Twins	Virtual simulations of metabolic and physiological responses

Despite technical promise, significant limitations persist, including the "black box" nature of complex algorithms and the risk of bias in models trained on non-indigenous datasets that underrepresent Indian dietary cultures.

Ultimately, this technological renaissance empowers the next generation of practitioners through generative AI-based clinical simulations and mandatory national curricula, ensuring that nutritional guidance becomes a dynamic, data-informed science.

Journal of Clinical and Biomedical Sciences

AI In Microbiological Investigations: From Algorithmic Discovery to Precision Stewardship

Dr. Sughosh Kulkarni

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Abstract

The integration of Artificial Intelligence into healthcare is not a sudden event, but the culmination of decades of technological evolution. This presentation begins by briefly tracing that history, setting the stage for the specific, transformative revolution now occurring in Clinical Microbiology.

We first address the critical "discovery void" in therapeutics. As traditional methods fail to keep pace with resistance, we explore how AI is breaking the deadlock—moving beyond nature-derived screening to computationally design novel antibiotics that target multidrug-resistant pathogens in ways humans had not conceived.

Next, we move to the laboratory bench, where the microscope and the incubator are transforming from passive tools into intelligent sensors. We discuss the rise of "Digital Microbiology," where computer vision automates the tedious screening of slides and culture plates. This shift allows the microbiologist to move from routine triage to complex diagnostic interpretation.

The discussion then deepens into the genomic horizon. We examine how predictive models are evolving beyond simple gene detection to forecast evolutionary trajectories, helping us anticipate emerging resistance patterns before they impact the clinic.

Finally, we arrive at the most immediately applicable frontier for the practicing clinician: Large Language Models (LLMs). We will demonstrate how "prompt engineering" can transform a standard antibiotic sensitivity report into a powerful stewardship tool. By harnessing these models to interpret complex guidelines and calculate therapeutic metrics, we can guide clinicians toward the most effective therapy. This session argues that the future is not about replacing the expert, but creating the "Augmented Microbiologist"—using silicon intelligence to deliver precision care at the bedside.

Journal of Clinical and Biomedical Sciences

AI in Neurology: When Clinical Intuition Meets Cognitive Machines

Dr. Guhan Ramamurthy

Senior Consultant Neurologist, BG Institute of Neurosciences, Tuticorin, Tamil Nadu



Abstract

Neurology has always demanded more than data. It is a discipline shaped by inference, temporal evolution, pattern recognition, and clinical intuition—often operating in the absence of certainty. Artificial Intelligence (AI) enters neurology not as a replacement for this reasoning, but as a mirror that reflects, magnifies, and occasionally challenges how neurologists think. Across major neurological domains—stroke, epilepsy, movement disorders, neurocritical care, and neurorehabilitation—AI is redefining how complexity is processed. By integrating multimodal neurological data spanning neuroimaging, electrophysiology, clinical phenotyping, and longitudinal outcomes, AI systems reveal patterns that are biologically plausible yet clinically elusive. The true disruption lies not in automation, but in a conceptual shift: from episodic diagnosis to trajectory-based prediction, from population means to individualized neurological futures, and from reactive care to anticipatory decision-making. Yet neurology exposes the fragility of algorithmic confidence. Rare disorders, imbalanced datasets, evolving phenotypes, and context-sensitive outcomes render simplistic accuracy metrics inadequate. Without explainability, external validation, and ethical grounding, AI risks becoming precise but clinically hollow. In this landscape, the neurologist's role becomes more—not less—critical: as arbiter of relevance, interpreter of uncertainty, and guardian against cognitive overreach. This talk proposes that the future of neurology is neither human-led nor machine-driven, but cognitively collaborative. When AI is aligned with neurological reasoning rather than imposed upon it, the specialty stands at the threshold of a new identity—where machines enhance judgment, not replace it, and neurology evolves from pattern recognition to predictive intelligence.

Journal of Clinical and Biomedical Sciences

Artificial intelligence in Dermatology

Dr Thammannagowda Prarthana

Consultant Dermatologist, Brindavan Daffodils hospitals and Apollo BGS Hospital, Mysore



Abstract

Artificial intelligence (AI) is rapidly transforming dermatology by enhancing diagnostic accuracy, disease monitoring, and personalized patient care. Leveraging advances in machine learning and deep learning, AI systems are increasingly capable of analysing clinical images, dermoscopy, histopathology, and multimodal data with performance comparable to, and in some contexts exceeding, that of expert dermatologists. In **melanoma and non-melanoma skin cancers**, convolutional neural networks have demonstrated dermatologist-level accuracy in the detection, with further gains achieved through human–AI collaboration. In **inflammatory skin diseases,** AI has enabled automated diagnosis, disease classification, and objective severity scoring in conditions such as psoriasis, atopic dermatitis, hidradenitis suppurativa. Image-based models and longitudinal data analysis allow for consistent assessment and prediction of treatment response, reducing interobserver variability. AI applications are expanding into **hair and nail disorders,** where algorithms assist in diagnosing alopecia subtypes, assessing hair density and growth, and classifying nail pathologies using standardized imaging. The integration of **wearable devices** and smartphone-based sensors further enables continuous monitoring of disease activity, environmental triggers, treatment adherence, and patient-reported outcomes, supporting a shift toward proactive and personalized dermatologic care.

The future of AI in dermatology lies in multimodal data integration, real-world validation, ethical implementation, and equitable representation across diverse skin types. Rather than replacing clinicians, AI is poised to function as an intelligent partner—augmenting clinical judgment, improving workflow efficiency, and ultimately enhancing patient outcomes across the spectrum of dermatologic diseases.

Journal of Clinical and Biomedical Sciences

Abstracts of Oral Presentations (Faculty)

Journal of Clinical and Biomedical Sciences

OP_F_01

Histological Cartography of the tumour microenvironment: Mapping Stromal and Inflammatory zones in Head and Neck Squamous Cell Carcinoma by Yamamoto- Kohama System- An Observational Study

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Abstract

Background: Head and neck squamous cell carcinoma (HNSCC) show a continuous rising trend of prevalence and incidence rates across the globe with a projected 30% rise by 2030. The tumor stroma is a heterogenous microenvironment that plays a crucial role in tumor structure and function. This study evaluates desmoplastic stromal reaction patterns and peri-tumoral inflammatory infiltrate with the various histopathological parameters, including histological grade, worst pattern of invasion (WPOI), depth of invasion (DOI), Yamamoto–Kohama grade (YK grade), perineural invasion (PNI), lymph vascular invasion (LVI), and other clinical parameters of the patients

Methods: A retrospective observational study was conducted on 160 cases of HNSCC. After obtaining institutional ethical clearance and informed consent, clinical information was retrieved from patient's case records. Archived hematoxylin and eosin–stained sections were reviewed independently by two experienced pathologists and evaluated for various histopathological parameters. Statistical analysis was performed using the Chi-square test or Fisher's exact test. A p-value < 0.05 was considered statistically significant.

Results: Mature stromal response (SR) was predominantly observed in well-differentiated HNSCC and showed significant associations with tumor site (p=0.01), histological grade, peritumoral inflammatory infiltrates, stage, DOI, WPOI, YK classification, LVI (all $p<0.01$) and PNI ($p=0.02$). Peritumoral inflammatory infiltrate correlated significantly with adverse pathological parameters, including stromal type, stage, WPOI, DOI and YK classification (all $p<0.01$). All YK G4D cases demonstrated immature SR and WPOI 5. YK classification showed significant associations with stromal type, grade, stage, peritumoral inflammatory infiltrates, DOI, WPOI, PNI and LVI (all p<0.01)

Conclusions: The significant association found between stromal characteristics, peritumoral inflammatory response and YK classification with established prognostic parameters in HNSCC high lightens their potential value in prognosis and risk stratification. Evaluation of stromal characteristics offers a robust histopathological framework for future clinical and molecular research.

Keywords: Squamous Cell Carcinoma, Yamamoto- Kohama classification, Tumor stroma

Journal of Clinical and Biomedical Sciences

OP_F_02

E-portfolios as a tool for competency based reflective practice on selected advanced nursing procedures among Nursing Students at selected Institutions, Kolar

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Abstract

Background: As artificial intelligence reshapes healthcare education, nursing training is evolving from static evaluation to intelligent, data-driven learning. AI-enabled e-portfolios transform traditional documentation into smart reflective platforms by analyzing clinical performance, tracking competency progression, and providing personalized feedback. By integrating AI with e-portfolios, nursing education advances toward adaptive learning, predictive competency assessment, and deeper reflective practice preparing students for safe, evidence-based, and future-ready clinical care.

Objective/Aim: To explore the effectiveness of e-portfolios in enhancing competency-based reflective practice, skills, and learning perceptions among B.Sc. Nursing students.
Methods: A quantitative pre-experimental One-Group Repeated Measures Design was conducted among 95 B.Sc. Nursing students from selected nursing institutions in Kolar, through Computer generated random sampling technique. Competency-based reflective practice was evaluated using a standardized skills checklist and reflective writing rubric and students' perceptions were assessed through a structured perception scale. The intervention involved a structured e-portfolio based intervention by conducting workshop and guidance on creating, uploading procedure videos, and reflective documentation with assessment module focused on selected advanced nursing procedures, including venous catheter insertion and high-risk medication administration. Pretest assessments were followed by 15th day and 30th day (one month) of guided e-portfolio implementation with posttest evaluations analyzed using descriptive statistics, paired t-tests, RMANOVA and chi-square tests to determine effectiveness and associations with selected socio-demographic variables.

Results: Post-intervention analysis revealed a statistically significant improvement in competency scores and reflective writing skills compared to pretest levels at ($p < 0.001$). Students' perceptions toward e-portfolios demonstrated a marked shift from unfavorable to highly favorable perception following the intervention. RMANOVA indicated a statistically significant improvement in competency and reflective writing scores across assessment points over a time period following the intervention ($p < 0.001$). Competency, reflection, and perception scores showed significant associations with age, gender, and prior digital learning exposure ($p < 0.05$).
Conclusions: AI-enabled e-portfolios proved to be a powerful tool significantly enhancing nursing student's clinical competency and learning engagement. Their integration transforms traditional assessment into an intelligent, competency-driven approach essential for future-ready nursing education for the quality patient safety outcomes.

Keywords: E-portfolio, Competency-based nursing education, Reflective practice, advanced nursing procedures, Clinical assessment.

Journal of Clinical and Biomedical Sciences

OP_F_03

Impact of Hearing Health Education on Knowledge of Anganwadi Teachers regarding Early Identification of Hearing Loss

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Abstract

Background: Hearing loss is one of the most common congenital and early childhood disabilities. Delayed identification adversely impacts speech, language development, academic achievement, and psychosocial well-being. Early detection and intervention ideally within the first few years of life are critical for optimal outcomes. Anganwadi teachers, as frontline community health workers under India's Integrated Child Development Services (ICDS), play a pivotal role in monitoring early childhood development and can serve as key agents in the early identification of hearing impairment. The present study evaluated the effectiveness of an interactive hearing health education workshop in improving knowledge of Anganwadi teachers regarding early signs of hearing loss and the importance of timely referral.

Methods: A pre- and post-test interventional design was employed with 86 Anganwadi teachers who participated in a structured, interactive workshop conducted as part of World Hearing Day 2025. The training included orientation sessions, role-plays, and discussions on age-specific indicators of hearing disorders, screening principles, and the importance of early identification and intervention. Knowledge was assessed using a validated questionnaire administered before and immediately after the workshop. Data were analyzed using a paired-samples *t*-test.

Results: The mean pre-test score was 5.67 (SD = 1.42), which increased significantly to 8.06 (SD = 1.73) in the post-test ($t(85) = -10.89$, $p < 0.001$). The mean improvement of 2.39 points (95% CI: 1.95–2.83) reflects a substantial gain in knowledge following the intervention.

Conclusion: A single interactive educational session significantly enhanced Anganwadi teachers' knowledge of early hearing loss identification. Integrating such capacity-building workshops into routine ICDS training curricula can strengthen community-based surveillance systems, facilitate early detection, and improve developmental outcomes for children with hearing impairment.

Keywords: Anganwadi teachers; hearing loss; early identification; health education; pre-post intervention; community health workers; World Hearing Day; childhood hearing screening.

Journal of Clinical and Biomedical Sciences

OP_F_04

NutraGlyx: Development and Evaluation of a Dietary Management Software for Type II Diabetes

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Abstract

Background: Type II diabetes mellitus is increasing rapidly in India. Lifestyle changes and unhealthy food habits are major reasons. Medical treatment alone is not sufficient. Dietary management plays a key role in controlling blood glucose levels. Traditional Indian healthcare systems have used medicinal herbs for many years. Several herbs are known to reduce blood sugar levels. However regular inclusion of these herbs in daily meals remains limited. Lack of awareness and absence of structured dietary guidance are major challenges.

Methods: The study aimed to design and evaluate a user-friendly dietary management software to support self-care in individuals with Type II diabetes. Selected indigenous medicinal herbs were authenticated, processed, and standardized for safe dietary use. Nutraceutical recipes were developed using commonly consumed foods. A controlled dietary intervention was carried out among Type II diabetic women. Standardized meals with herb incorporated recipes were provided. Fasting and post prandial blood glucose levels were monitored to assess dietary effectiveness. Based on the validated dietary approach, an interactive software named *NutraGlyx* was developed. The system was built using MySQL for database management and PHP for user interface design. The software provided modules for diabetes education, diet planning, health parameter tracking, exercise guidance, and herbal recipe support. Users could record blood glucose values, body weight, and blood pressure. The usability and acceptability of the software were assessed by diabetic participants and practicing dietitians.

Results: Participants who consumed herb incorporated recipes showed a significant reduction in post prandial blood glucose levels compared to control diet. The *NutraGlyx* software was well accepted. Users reported improved dietary awareness and better confidence in self-care practices.

Conclusion: The study shows that integrating traditional medicinal knowledge with a structured dietary management software is a practical and culturally acceptable approach for supporting diabetes self-management. This model has potential for wider application in community health care settings.

Keywords: Nutraceuticals, Indigenous medicinal herbs, Dietary management software, Type II diabetes, Glycemic control.

Journal of Clinical and Biomedical Sciences

OP_F_05

Critical value analysis at Hematology section in a tertiary care hospital - A cross sectional study

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Abstract

Background: The laboratory critical value (CV) reporting has gained significance in the recent times due national and international focus on patient safety. International Organization for Standardization (ISO) 15189: 2012 has accepted Critical value notification (CVN) as an essential part of accreditation in medical laboratories.

Methods: This study was a cross sectional and descriptive study design for the period of one year (Jan 2024 to Dec 2024). The parameters considered critical are Hemoglobin, Platelet count and White blood cell count (WBC) as per the standard operating procedure (SOPs) followed in Sri Devaraj Urs medical college. A test result that was significantly outside the normal range and that required immediate communication was considered as a "critical value (CV)". CVs were communicated to the clinicians within 30 mins of reporting. All the CVs were documented. A survey was conducted to analyse the satisfaction of clinicians over Haematology Critical Value Notification (CVN).

Results: Out of total 90717 examined in Haematology, 4408 were critical values accounting for 5.2%. Highest CVs were received from medicine department 2574 (52.59%), followed by paediatric department 750 (15.16%). The analytes most commonly notified for critical value were Haemoglobin 2476 (2.73%) followed by Platelets 1727 (2.27%) and WBCs 166 (0.22%). Clinicians reported good overall satisfaction with hematology critical value notification services (mean score 3.76, median 4) in a 5-point Likert scale. While the system was largely considered adequate, feedback highlighted concerns regarding delays in reporting, and the need for earlier communication of critical values.

Conclusions: The majority of critical values were reported from the Department of Medicine, with adults forming the largest affected age group. Implementation of the Critical Value Notification (CVN) system facilitated timely communication of life-threatening laboratory results, enabling early clinical intervention and improving patient outcomes in critical care settings. Although clinician satisfaction with the current critical value notification system was good, enhancing timeliness, reliability of alerts, and communication is essential to further improve patient safety and clinical efficiency.

Keywords: Critical value analysis, hematology, Clinician satisfaction survey.

Journal of Clinical and Biomedical Sciences

OP_F_06

Attitude And Behaviour Towards Teaching and Learning Activity Among Teachers and Students

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Abstract

Background: Attitude and behaviour of teachers and students play a pivotal role in the effectiveness of teaching learning activities, particularly in nursing education where academic and clinical learning are closely integrated.

Objectives: The present study aimed to assess the attitude and behaviour towards teaching and learning activities among nursing teachers and students in selected nursing colleges.

Methods: A quantitative descriptive survey design was adopted. The study was conducted among 249 nursing teachers and 762 nursing students from selected nursing colleges. Data were collected using a structured tool consisting of socio-demographic variables, an open-ended attitude questionnaire, and a behaviour rating scale. Attitude was classified as positive or negative based on the proportion of "Yes" responses, while behaviour was assessed using a Likert-type scale. Data were analysed using descriptive and inferential statistics.

Results: Most teachers were females, between 20 to 40 years, postgraduates with less than 10 years of teaching experience and majority from private colleges. Students were mainly females with B.Sc Nursing aged between 18 to 21 years. Teachers reported that a majority of students expressed learning difficulties (83.5%), utilized clinical facilities effectively (79.9%), and demonstrated hard work toward learning (77.1%) but comparatively lower voluntary participation in co-curricular activities (56.6%). Students perceived teachers' attitude was very positive with high levels of satisfaction regarding communication (92.8%), responsiveness (89.5%), use of innovative teaching methods (81.2%), individual attention (78.2%), and concern for student welfare (81.5%). Areas required to improve is emotional regulation and equitable treatment of students.

Conclusion: The study concluded that, an overall positive attitude was observed towards teaching and learning activities among both nursing teachers and students, with students expressing a higher level of satisfaction with teachers' attitudes. The findings emphasized the need to strengthen teacher–student relationship, promoting emotional competence, and enhancing participatory teaching strategies to improve the quality of nursing education.

Keywords: Attitude, Behaviour, Teaching–Learning Activities, Nursing Teachers, Nursing Students, Nursing Education.

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Ph.D Scholars

Journal of Clinical and Biomedical Sciences

OP_S3_01

From Uncertain to Therapeutic Insight: An Integrated *In Silico* Analysis of Parkinson's Disease–Associated Genetic Variants

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Abstract

Background: Parkinson's disease (PD) is the second most common neurodegenerative disorder and represents a growing global health challenge. Recent advancements in whole-exome sequencing (WES) have enabled the identification of numerous genetic variants associated with PD; however, a substantial proportion of these variants are classified as variants of uncertain significance (VUS), particularly missense variants. In this study, WES was performed on 50 clinically diagnosed PD cases, of which 17 cases harbored 24 missense VUS in 12 PD-associated genes (*EIF4G1, LRRK2, LRRK1, DCTN1, DNAJC6, TWNK, GIGYF2, PLA2G6, VPS13C, FUS, GBA1, PLXNA4*). The ambiguous nature of these variants poses significant challenges for clinical interpretation, disease risk assessment, and therapeutics. To address this gap, integrated computational (in silico) approaches were employed to systematically evaluate the pathogenic potential and functional consequences of PD-associated VUS. A secondary objective included molecular docking analysis with FDA-approved drugs for Parkinson's disease.

Methods: The VUS from 17 cases were analyzed using *in silico* tools encompassing sequence-based tools like REVEL, CADD, Alpha Missense; Structural stability and energy changes induced by amino acid substitutions were analyzed using FoldX, DynaMut2, Missense3D, CAST-P and NetSurfP. Functional impact was assessed using Protvar, STRING and protein domain sites. Variants were classified into high, moderate, and low priority based on the outcomes from above computational tools. Highly deleterious variants were further subjected to molecular docking analysis with 8 FDA-approved drugs for Parkinson's disease which included pramipexole, safinamide, rasagiline, carbidopa, ropinirole, entacapone, rotigotine and levodopa.

Results: Out of 24 VUS analyzed *in silico*, 5 variants were prioritized as high, 8 as moderate and 11 as low. The genes *DNAJC6, LRRK2, PLXNA4* and *DCTN1* were identified to be highly deleterious variants based on the high pathogenicity scores, structural destabilization, and involvement in functional sites. Molecular docking analysis showed that safinamide had the strongest binding affinity, followed by rotigotine and carbidopa.

Conclusions: This study demonstrates the utility of an integrated *in silico* framework for resolving the pathogenic potential of missense VUS. This strategy provides a rational foundation for designing targeted in *vitro* and *in vivo* functional studies, ultimately contributing to improved understanding of disease mechanisms and targeted therapeutic approaches in PD.

Keywords: Parkinson's disease, Whole-exome sequencing, Variants of Uncertain Significance, Molecular docking.

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Journal of Clinical and Biomedical Sciences

OP_S3_02

Automated Flow Cytometry and Machine Learning for Detection and Quantification of Microplastics in Drinking Water Samples

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Abstract

Background: Microplastics (MPs) are pervasive contaminants in aquatic environments and pose potential risks to ecosystems and human health. Accurate characterization of MPs, particularly their morphology (spheres, fibers, and fragments), is essential for understanding their environmental behavior and removal efficiency in water treatment systems. While flow cytometry (FC) enables rapid and high-throughput particle analysis, it has limited capability to reliably distinguish microplastic morphologies in complex water matrices.

Methods: This study presents an integrated analytical approach combining multi-parameter flow cytometry with machine learning for automated, morphology-specific quantification of microplastics. Water samples including reverse osmosis (RO) water, bottled water (BOW), and tap water (TPW) were analyzed. High-resolution flow cytometry was used to acquire forward scatter (FSC), side scatter (SSC), and fluorescence signals from thousands of particles. A reference library of well-characterized microplastic standards was established, and supervised machine learning models were trained and validated to classify microplastic morphologies based on cytometric signatures.

Results: The developed framework enabled reliable differentiation and quantification of microplastic morphologies across different water types. RO water exhibited near-complete removal of particulate matter with minimal fluorescence signals, indicating effective treatment performance. Tap water showed moderate particle counts with comparatively lower microplastic-associated signals. In contrast, bottled water demonstrated the highest particle abundance and strongest fluorescence signatures, suggesting elevated microplastic-related particulate loads. The machine learning–assisted approach achieved high classification accuracy and improved resolution of morphology-dependent particle distributions.

Conclusions: The integration of flow cytometry with machine learning significantly enhances the capability for rapid, automated, and morphology-resolved microplastic analysis in water samples. This approach transforms conventional flow cytometry into a powerful high-throughput tool for comprehensive microplastic characterization, supporting improved environmental monitoring, risk assessment, and optimization of water treatment processes.

Keywords: Microplastics; Flow Cytometry; Machine Learning; Water Treatment; Particle Morphology; Environmental Monitoring.

Journal of Clinical and Biomedical Sciences

OP_S3_03

Manganese Chloride and Zinc Chloride exposure alters behavioural and histopathological patterns in adult zebrafish: A range finding and acute toxicity assessment

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Abstract

Background: Manganese and zinc are essential trace elements that act as cofactors in numerous enzymatic and physiological processes; however, excessive exposure to these metals can function as environmental stressors and induce neurotoxic effects. Chronic accumulation, particularly in the brain, may disrupt normal physiological and neuronal activities, leading to neurological disorders, motor dysfunction, and behavioral impairments. Adult zebrafish (Danio rerio) are widely accepted as a sensitive vertebrate model for toxicological research due to their genetic and physiological similarities to humans, making them especially useful for investigating the acute, behavioral, and neurotoxic effects of environmental contaminants such as manganese and zinc, despite limited existing data on their impacts in adult zebrafish.

Methods: To investigate the acute toxicity of manganese and zinc chlorides, a five-day exposure study was conducted using adult zebrafish with the aim of determining the median lethal concentration (LC_{50}) for each metal. Initially, a pilot range-finding assay was performed to identify appropriate exposure concentrations for the LC_{50} studies. Twenty zebrafish were randomly divided into five groups: a control group, manganese chloride ($MnCl_2$) at 3.0 mM and 5.5 mM, and zinc chloride ($ZnCl_2$) at 1.8 ppm and 3.3 ppm. Acute toxicity tests were carried out in triplicate under static conditions without feeding or water renewal for five days to ensure statistical reliability and reproducibility. Mortality and behavioral responses were recorded daily to evaluate the toxic effects of these metals under controlled laboratory conditions.

Results: Acute toxicity testing of $MnCl_2$ and $ZnCl_2$ in adult zebrafish revealed distinct dose–response profiles. $MnCl_2$ displayed a steep sigmoidal curve with 100% mortality at concentrations ≥22 mM and an LC_{50} of 15.3 mM, whereas $ZnCl_2$ showed a broader response range, reaching 100% mortality at concentrations ≥112 ppm with an LC_{50} of 51.2 ppm. Probit regression analysis confirmed the higher overall toxicity of $MnCl_2$, as indicated by a steeper slope and narrower confidence intervals, and comparative evaluation of LC_{10}, LC_{50}, and LC_{90} values consistently supported this finding. Time-course analysis demonstrated that $MnCl_2$ induced delayed but cumulative mortality, while $ZnCl_2$ caused rapid lethality within 24 hours at higher concentrations, reflecting a threshold-driven response with minimal delayed effects. At sublethal concentrations, exposure to 5.5 mM $MnCl_2$ resulted in 25% mortality by day 5, whereas 3.3 ppm $ZnCl_2$ produced 25% mortality by day 3, suggesting relatively greater acute toxicity of zinc chloride at lower doses. Control fish showed no mortality throughout the experimental period. Behavioral abnormalities, including hyperactive swimming and episodes of immobility, were observed within 24 hours in all treatment groups; however, surviving fish gradually returned to normal swimming behavior within 15 days after transfer to clean water, indicating partial recovery from neurotoxic effects.

Conclusion: $MnCl_2$ is significantly more toxic than $ZnCl_2$ to adult zebrafish under acute exposure conditions, as evidenced by its steep dose–response relationship, cumulative mortality, and narrow safety margin indicative of prolonged toxic action. In contrast, $ZnCl_2$ demonstrates threshold-based toxicity with rapid onset at higher concentrations and limited cumulative effects. These findings emphasize the importance of distinguishing metal-specific toxicodynamic when evaluating environmental risks. This exploratory study establishes concentration benchmarks for future LC_{50} determinations and confirms the neurotoxic potential of both manganese and zinc chlorides. The zebrafish model effectively captured temporal- and concentration-dependent toxicity patterns, and the observed behavioral impairments along with partial reversibility further validate its utility for aquatic toxicology and metal-induced neurotoxicity research.

Postgraduate Students

Journal of Clinical and Biomedical Sciences

OP_S2_01

Spectrum Of Bone Tumors and Their Histopathological and Radiological Correlation: Insights from A Tertiary Care Centre

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Abstract

Background: Bone tumors encompass a wide spectrum of benign and malignant lesions with overlapping clinical and radiological features. Accurate diagnosis requires correlation between radiological findings and histopathological examination, which remains the gold standard.

Aims and Objectives: To discuss the spectrum of bone tumors and tumor like lesions. To establish histopathological correlation with radiological diagnosis of bone tumors and tumor like lesions.

Methods: This is a 2-year hospital-based study conducted retrospectively in the Department of Pathology which included 78 cases of bone tumors received for histopathological evaluation from January 2024 to December 2025. Clinical details and radiological diagnoses were retrieved from medical records and imaging reports. All specimens were processed using routine histopathological techniques, and diagnoses were rendered based on microscopic features. Radiological findings were compared with histopathological diagnoses to assess diagnostic concordance.

Results: The study population comprised patients across a wide age range, with a slight male predominance. Plasma cell neoplasm (18 cases) was the most common tumor, followed by giant cell tumor (12 cases), chondrosarcoma (10 cases), osteochondroma (8 cases), and Ewing sarcoma (6 cases). Other lesions included osteosarcoma, osteofibrous dysplasia, small round cell neoplasms, and rare benign tumors - chondroblastoma and aneurysmal bone cyst. Radiological and histopathological diagnoses were concordant in approximately 89.7% of cases. Discordance was mainly observed in lesions with overlapping imaging features, particularly among cartilaginous tumors and small round cell neoplasms

Conclusions: The present study highlights the wide spectrum of bone tumors encountered in routine pathology practice. A high degree of radiological–histopathological concordance emphasizes the crucial role of imaging in the diagnostic workup of bone tumors. However, histopathology remains the gold standard for definitive diagnosis, especially in radiologically inconclusive cases. An integrated approach between radiologists and pathologists is essential for accurate diagnosis and optimal patient management.

Keywords: Bone Tumors; Histopathological; Radiological Correlation; Diagnostic Concordance.

Journal of Clinical and Biomedical Sciences

OP_S2_02

Utility Of Morphological Markers of Chromosomal Instability in Cytological Grading of Breast Cancer – An Observational Study

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Abstract

Introduction: Breast carcinoma is one of the most common malignancies among women and is associated with significant morbidity and mortality. Carcinogenesis is driven by genetic alterations leading to chromosomal instability (CIN): micronuclei (MN), chromatin bridges (CB), and multipolar mitosis (MPM). Fine-needle aspiration cytology (FNAC) is a rapid, minimally invasive, and cost-effective diagnostic tool for breast lesions. Identification of morphological markers of CIN on cytology smears may provide additional diagnostic and prognostic information, especially in resource-limited settings.

Objective: To determine the role of markers of CIN on breast cytology. To correlate the role of markers of CIN with cytological grading of Invasive Ductal Carcinoma and Fibroadenoma in FNAC.

Materials & Methods: A retrospective observational study was conducted included 100 cases of breast lesions evaluated by FNAC. Smears were reviewed for the presence of micronuclei, chromatin bridges, and multipolar mitosis. Micronuclei were manually counted in 1,000 epithelial cells under oil immersion microscopy. The frequency of CB and MPM was recorded. Cases were divided into benign and malignant groups. Statistical analysis was performed to determine the significance of differences between benign and malignant lesions.

Results: Micronuclei were observed in both benign and malignant lesions; however, the mean MN score was significantly higher in malignant cases (28.1 ± 5.8) compared to benign lesions (3.71 ± 1.20). A strong association was noted between increasing MN count and higher tumor grade ($p<0.001$). Chromatin bridges were more frequently identified in high-grade carcinomas, while multipolar mitosis showed an increasing trend with malignancy but without consistent statistical significance.

Conclusion: Morphological markers of chromosomal instability, demonstrate significant diagnostic and grading value in breast cytology. Incorporation of CIN marker assessment into routine FNAC evaluation may improve diagnostic accuracy and aid in risk stratification of breast lesions.

Key words: Breast neoplasms, chromosomal instability, fibroadenoma, micronucleus tests.

Journal of Clinical and Biomedical Sciences

OP_S2_03

Association Between Tandem Stance Test and Cognitive Function In Older Adults (Pilot Study)

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Abstract

Background: Cognitive decline is a significant public health concern, especially among the older population worldwide. As life expectancy increases, cognitive impairment rises, placing a significant burden on healthcare systems and caregivers. Early detection is essential for implementing interventions that may slow its progression and improve quality of life. Traditional cognitive screening tools, such as the Mini-Mental State Examination (MMSE) and the Montreal Cognitive Assessment (MoCA), are used to assess cognitive function. However, these assessments require trained personnel and may not always be practical in low-resource settings.

Objectives: To evaluate the correlation between tandem stance performance and cognitive score (MoCA) in older adults

Methodology: A pilot cross-sectional study was conducted among 26 older adults aged 65–75 years (mean age = 69.31 ± 3.72 years) at Ramaiah Hospitals. The Tandem Stance Test assessed balance, and the MoCA evaluated cognitive function. Data were analyzed using Pearson's correlation coefficient.

Results: The mean Tandem Stance score was 22.50 ± 9.10, and the mean MoCA score was 23.27 ± 4.03. A moderate positive correlation was found between Tandem Stance and MoCA scores ($r = 0.432$, $p = 0.028$), indicating that better balance is associated with higher cognitive performance. These findings support existing evidence that postural control and cognition share common neural pathways, particularly involving the frontal cortex, basal ganglia, and cerebellum.

Conclusion: There is a significant relationship between balance and cognitive function in older adults. The Tandem Stance Test may be a useful, quick, and low-cost screening tool for early identification of cognitive decline in clinical settings.

Keywords: Tandem stance test ,Cognitive function, MoCA, Older adults.

Journal of Clinical and Biomedical Sciences

OP_S2_04

Joint Toxic Impacts of Polyvinylchloride, Chlorantraniliprole and Para-Phenylenediamine on zebrafish embryo-larval stage *(Danio rerio)*

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Abstract

Background: Environmental pollution is causing due to contaminants released by industrial chemicals and plastics has become a major global concern. Polyvinyl chloride (PVC), chlorantraniliprole (CAP), and para-phenylenediamine (PPD) are widely used chemicals that frequently enters into aquatic environments. Even the individual toxicity of these compounds is well established, studies on combined toxic effects on zebrafish embryos remains limited. The present combined toxicity study demonstrates that interactions among these chemicals' effects on the significant developmental and physiological toxicity in zebrafish (Danio rerio) embryos, with specific effects on morphology, cardiac function, hemoglobinization, and apoptosis.

Methods: Zebrafish embryos were exposed to combined concentrations of PVC: 8–16 mg/mL, CAP: 50–150 mg/mL, and PPD: 4–8 mg/mL. Chemical exposure was carried out from 24 hours post-fertilization (hpf) to 120 hpf. Mortality and hatching success were recorded daily up to 120 hpf. Heart rate and sinus venosus–bulbus arteriosus (SV-BA) distance, along with body length and yolk stalk length, were measured at 72 and 96 hpf using a stereo zoom microscope, followed by quantitative analysis with ImageJ software. hemoglobinization was assessed using o-dianisidine staining, while apoptotic cell death was detected by acridine orange staining.

Results: The combined exposure produced a dose-dependent increase in mortality and developmental deformities compared with control and treatment groups. Delayed hatching rate, and embryos exhibited pericardial and yolk sac edema, spinal curvature, growth retardation, and swim bladder absence. At higher concentrations elongated SV–BA distance and decreased heart rate. O-dianisidine staining revealed reduced hemoglobinization at higher concentrations, and acridine orange assays confirmed enhanced apoptosis, particularly in cardiac and trunk regions at higher concentrations.

Conclusions: Combined-exposure to PVC, CAP, and PPD induces severe effects on developmental and physiological toxicity in zebrafish embryos, rather than single compound toxicity is more when they are given in combination. The findings underscore the importance of evaluating mixture toxicity under environmentally realistic conditions and highlight the zebrafish model's sensitivity for ecotoxicological risk assessment.

Journal of Clinical and Biomedical Sciences

OP_S2_05

Effectiveness of Multicomponent intervention on knowledge and practice among patients undergoing Chemotherapy or Radiation therapy in Prevention and Management of selected side effects.

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Abstract

Background: Patients undergoing chemotherapy or radiation therapy commonly experience distressing side effects that affect daily activities and self-care. Nurse-led educational strategies may enhance patients' knowledge and practices related to prevention and management of these side effects. This study aimed to evaluate the effectiveness of a multicomponent intervention on knowledge and practice among patients undergoing chemotherapy or radiation therapy.

Methods: A quasi-experimental one-group pre-test and post-test design was adopted. Using a probability sampling technique, 60 patients undergoing chemotherapy or radiation therapy were selected from R.L. Jalapa Hospital and Research Centre, Tamaka, Kolar. Data were collected using a structured knowledge questionnaire and an observational practice checklist. Following the pre-test, a multicomponent intervention was administered. Knowledge was reassessed after 15 days, while practice was evaluated on the 5th, 10th, and 15th days post-intervention. Descriptive and inferential statistics were used for data analysis.

Results: The mean post-test knowledge score significantly increased compared to the pre-test score (6.52 ± 1.25 vs. 11.65 ± 1.78). Initially, 94% of patients had inadequate knowledge; following the intervention, 52% achieved adequate knowledge and 48% had moderate knowledge. Practice scores showed a progressive improvement across post-tests, with mean scores increasing from 8.72 ± 2.00 at baseline to 18.02 ± 0.81 by the third post-test. The proportion of patients demonstrating good practice increased from 25% to 55%. A moderate and statistically significant correlation between knowledge and practice was observed at post-test III ($r = 0.612$, $p = 0.001$). Post-test knowledge was significantly associated with education and area of residence, while practice was associated with education and marital status.

Conclusion: The nurse-led multicomponent intervention was effective in improving knowledge and practice related to the prevention and management of selected chemotherapy and radiation therapy side effects.

Key words: Multicomponent intervention, chemotherapy, radiation therapy, knowledge, practice.

Journal of Clinical and Biomedical Sciences

OP_S2_06

Effectiveness of intervention package on knowledge regarding medicolegal cases and its documentation among nursing officers

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Abstract

Background: Medico-legal cases (MLCs) are an integral component of hospital practice and require nurses to possess adequate knowledge regarding identification, documentation, and reporting. Inadequate knowledge may lead to improper handling of cases and legal complications. Hence, this study aimed to assess the effectiveness of a structured intervention package on knowledge regarding medico-legal cases and their documentation among nursing officers at RL Jalappa Hospital and Research Centre, Tamaka, Kolar.

Method: A quantitative research approach with a quasi-experimental one-group pre-test and post-test design was adopted. The study included 80 nursing officers selected through purposive sampling based on inclusion criteria. Data were collected using a structured knowledge questionnaire consisting of 24 items covering general aspects of medico-legal cases, specific types of medico-legal cases, and documentation procedures. Following the pre-test, a structured intervention package on medico-legal cases and their documentation was administered through a 45-minute PowerPoint presentation followed by 15 minutes of discussion. The post-test was conducted after 15 days using the same questionnaire. Data were analysed using descriptive and inferential statistics, including frequency, percentage, mean, standard deviation, paired *t*-test, and chi-square test.

Results: The mean pre-test knowledge score was 17.17 (SD = 3.38), which increased to 21.20 (SD = 1.50) in the post-test, indicating a statistically significant improvement ($t = 9.41$, $p < 0.001$). Area-wise analysis revealed significant improvement in knowledge related to general aspects ($t = 6.21$, $p = 0.00$) and specific medico-legal cases ($t = 12.62$, $p = 0.00$). Knowledge related to documentation showed a slight, non-significant improvement ($t = 0.29$, $p = 0.61$). A significant association was found between post-test knowledge scores and years of experience ($p= 0.003$), while other demographic variables showed no significant association.

Conclusion: The structured intervention package was effective in improving the knowledge of nursing officers regarding medico-legal cases. Regular educational programs are recommended to enhance nurses' medico-legal competence and promote accurate, legally compliant documentation in clinical practice.

Keywords: Medico-legal cases, Nursing officers, Knowledge, Documentation, Structured teaching program, Quasi-experimental study.

Journal of Clinical and Biomedical Sciences

OP_S2_07

Effectiveness of Competency-Based Training regarding knowledge and competency among Nursing Officers in Prevention of Mechanical Injuries Caused by Medical Devices to Patients Admitted in High-Dependency Units (HDUs) of a Tertiary Care Hospital Kolar

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Abstract

Introduction: Mechanical injuries caused by medical devices such as mattresses, adhesives, splints, restraints, probes, and cannulas are commonly observed in high-dependency units (HDUs) due to frequent invasive procedures and advanced technological interventions. These injuries may result in patient discomfort, delayed recovery, increased risk of complications, and higher healthcare costs. Mechanical trauma includes abrasions, lacerations, fractures, and pressure-related injuries. Nurses play a pivotal role in preventing such injuries through appropriate device handling, pressure injury prevention strategies, and correct body mechanics. However, gaps in structured training persist, particularly in high-risk settings like HDUs. Competency-Based Training (CBT) has emerged as an effective educational approach to enhance nurses' knowledge and clinical competency, thereby improving patient safety.

Aim: To evaluate the effectiveness of Competency-Based Training on knowledge and competency among Nursing Officers in the prevention of mechanical injuries caused by medical devices in patients admitted to HDUs of a tertiary care hospital in Kolar.

Method: A quasi-experimental one-group pre-test and post-test design was adopted. Sixty Nursing Officers working in HDUs were selected using a simple random sampling technique (lottery method). Data were collected using a structured knowledge questionnaire and a competency-based observational checklist. Competency-Based Training was administered immediately after the pre-test, and post-test assessments were conducted after 15 days. Data were analysed using descriptive and inferential statistics.

Results: Post-test knowledge scores showed a significant improvement compared to pre-test scores (pre-test: 19.03 ± 5.781; post-test: 26.90 ± 3.535; $p < 0.001$). Competency scores also increased significantly from 30.87 ± 7.084 to 48.53 ± 2.902 ($p < 0.001$). After the intervention, 83% of participants demonstrated adequate knowledge and 85% exhibited good competency. A very weak, non-significant correlation was observed between knowledge and competency scores. Post-test knowledge and competency scores were significantly associated with years of experience, while other demographic variables showed no significant association.

Conclusion: Competency-Based Training was effective in improving both knowledge and competency of Nursing Officers in preventing mechanical injuries caused by medical devices in HDUs.

Journal of Clinical and Biomedical Sciences

OP_S2_08

From Response to Resistance: Tumor Infiltrating Lymphocytes in Immune Landscape of Residual Breast Cancer-Post Neoadjuvant Chemotherapy

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Abstract

Introduction: Tumour-infiltrating lymphocytes (TILs) reflect the host immune response to tumour antigens and have emerged as robust prognostic and predictive biomarkers in breast cancer, particularly in the neoadjuvant setting, where they have been associated with improved therapeutic response and survival outcomes. TILs, evaluated on routine hematoxylin and eosin (H&E-stained) sections according to standardized guidelines, offer a reproducible and cost-effective parameter in routine diagnostic pathology practice. This study aimed to characterize the distribution of TILs in residual tumour and to assess their association with pathological response following neoadjuvant chemotherapy in breast carcinoma patients.

Methods: This retrospective cohort study included 47 histologically confirmed breast carcinoma patients treated with neoadjuvant chemotherapy followed by surgery. TILs were assessed in residual invasive tumour on post-neoadjuvant chemotherapy resection specimens using H&E-stained sections in accordance with International Immuno-Oncology Biomarker Working Group guidelines and categorized as low (<10%), intermediate (10–50%), and high (>50%), and pathological response was evaluated using the Miller–Payne grading system. Associations between TIL categories and response were analysed using appropriate statistical tests.

Results: The study included 47 breast carcinoma patients with a mean age of 50.9 ± 9.9 years, of whom 53.2% were over 50 years. Most patients received four cycles of neoadjuvant chemotherapy (78.7%). Post-treatment TIL levels were intermediate in 38.3%, high in 34.0%, and low in 27.7% of cases. Pathological complete response was achieved in 8.5% of patients, with a significant association observed between TIL levels and complete response ($p = 0.004$). Good pathological response (Miller–Payne Grades 4–5) was observed in 21.3%, and high TILs significantly predicted favorable response (OR 4.44; $p = 0.046$).

Conclusion: Tumour-infiltrating lymphocytes demonstrate heterogeneous distribution in residual breast carcinoma following neoadjuvant chemotherapy. Although overall correlation across all Miller–Payne grades was not statistically significant, higher post-treatment TIL levels were significantly associated with favorable pathological response. These findings support the utility of TIL assessment as a simple and cost-effective prognostic biomarker in residual breast cancer and highlight the need for larger studies incorporating molecular subtype stratification to further define its clinical significance.

Keywords: Tumour-infiltrating lymphocytes, Breast carcinoma, Neoadjuvant chemotherapy.

Journal of Clinical and Biomedical Sciences

OP_S2_09

Effectiveness of a Competency-Based Teaching Program on Knowledge and Competency among Nursing Officers regarding Drug Administration Protocol adherence to the Principles of Drug-Drug and Drug-Food Interactions at a Selected Tertiary Care Hospital Kolar

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Abstract

Background: Safe medication administration represents a critical dimension of modern nursing practice, particularly with respect to adherence to drug–drug and drug–food interaction protocols that directly influence patient safety outcomes. Despite its essential role, gaps in knowledge and competency remain evident among many Nursing Officers, especially those with fewer years of clinical exposure. Evidence suggests that structured Competency-Based Teaching Programs (CBTPs) can support the development of targeted knowledge, procedural skills, and safe medication practices through systematic, skills-oriented training modules. This study aimed to evaluate the effectiveness of a CBTP on knowledge and competency related to safe drug administration with an emphasis on drug–drug and drug–food interaction protocol adherence among Nursing Officers working in a tertiary care hospital.

Methods: A quasi-experimental one-group pre-test and post-test research design was adopted. Sixty Nursing Officers were selected through simple random sampling techniques. Data collection instruments included a structured knowledge questionnaire and an observational competency checklist. After the pre-test, participants received the CBTP intervention, and post-test assessment was conducted after 15 days. Descriptive and inferential statistical analyses, including paired t-tests and chi-square tests, were applied.

Results: Study findings indicated a significant increase in both knowledge and competency following the intervention. The mean knowledge score improved from 16.12 ± 4.38 to 23.76 ± 3.45, while the competency score increased from 31.87 ± 6.52 to 46.42 ± 3.12, with both improvements reaching statistical significance ($p < 0.001$). Post-intervention, 85% of participants demonstrated moderately adequate knowledge and 15% demonstrated adequate knowledge, with none remaining inadequate. Younger age groups and fewer years of clinical experience showed significant associations with post-test performance ($p < 0.05$). Correlation analysis revealed a weak but positive relationship between knowledge and competency scores.

Conclusion: The CBTP was effective in enhancing knowledge and practical competency related to safe medication administration among Nursing Officers, underscoring the value of structured, competency-based training for improving patient safety.

Keywords: Competency-Based Teaching Program, Nursing Officers, Drug Administration, Drug Interactions, Clinical Competency.

Journal of Clinical and Biomedical Sciences

OP_S2_10

Prevalence, Pattern and Determinants of Disabilities in Devarayasamudra: A Cross-Sectional Community-Based Study

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Abstract

Background: Disability is a significant public health problem in rural India due to aging, chronic diseases, and limited access to rehabilitation services. Community-level data are essential for planning effective community-based physiotherapy and rehabilitation services. This study aimed to identify disability patterns and socio-demographic profiles of the rural population in Devarayasamudra village.

Methods: A community-based cross-sectional study was conducted in Devarayasamudra village, Kolar District, Karnataka, after obtaining ethical approval. Out of 236 households in the village, 60 participants were selected through a door-to-door survey. Data were collected using a structured questionnaire covering socio-demographic details, health conditions, and disability status. Descriptive statistics and the chi-square test were used for data analysis, with significance set at $p < 0.05$.

Results: Out of 60 participants, 30% (n = 18) had a disability, with locomotor disability being the most common (66.7%), followed by neurological (22.2%) and other disabilities (11.1%). Participants with disability were older (mean age 55.4 ± 10.8 years) than those without. Disability was significantly associated with age group and presence of chronic health conditions ($p < 0.05$). Limited use of rehabilitation services was observed, indicating unmet community physiotherapy needs.

Conclusion: Disability is common in this rural community, mainly affecting locomotor function. Age and chronic conditions are key determinants, highlighting the need for early identification and enhanced community-based physiotherapy to reduce functional dependence.

Keywords: disability, prevalence, determinants, community-based physiotherapy, rural health.

Journal of Clinical and Biomedical Sciences

OP_S2_11

A Comparative Study of Platelet Parameters Among Diabetic Patients with And Without Retinopathy in Geriatric Population

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Abstract

Background: Diabetic retinopathy (DR) is a major microvascular complication of type 2 diabetes mellitus and a leading cause of visual impairment in the geriatric population. Chronic hyperglycemia promotes endothelial dysfunction and platelet activation, contributing to microvascular damage. Alterations in platelet indices such as mean platelet volume (MPV), platelet distribution width (PDW), and platelet-large cell ratio (P-LCR) reflect increased platelet reactivity and have been proposed as potential biomarkers of diabetic microangiopathy.

Aim: To compare platelet parameters among geriatric patients with type 2 diabetes mellitus with and without diabetic retinopathy and to assess their relationship with the severity of retinopathy. **Methods:** This hospital-based cross-sectional study included 110 geriatric patients (≥60 years) with type 2 diabetes mellitus, divided equally into DR (n = 55) and Non-DR (n = 55) groups. Diabetic retinopathy was diagnosed and graded according to ETDRS criteria. Platelet count, MPV, PDW, and P-LCR were measured using an automated hematology analyzer. Glycaemic indices and clinical variables were recorded. Statistical analysis was performed using SPSS, and a p-value <0.05 was considered significant.

Results: Age and sex distribution were comparable between groups. Duration of diabetes and HbA1c levels were significantly higher in the DR group ($p < 0.001$). MPV, PDW, and P-LCR were significantly elevated in patients with DR compared to Non-DR patients ($p < 0.001$) and showed a progressive increase with advancing stages of retinopathy. Platelet count and plateletcrit did not differ significantly between groups and showed no association with DR severity.

Conclusion: Elevated platelet activation indices, particularly MPV, PDW, and P-LCR, are significantly associated with diabetic retinopathy and its severity in the geriatric population, suggesting their potential role as simple and cost-effective biomarkers for early risk stratification. **Keywords:** Diabetic retinopathy; Platelet indices; Mean platelet volume; Geriatric diabetes; Microvascular complications.

Journal of Clinical and Biomedical Sciences

OP_S2_12

Impact of Age, Disease Stage, and Systemic Therapy on Gait and Balance in Head and Neck cancer: A Cross -Sectional Study

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Abstract

Background: Head and neck cancer (HNC) and its treatment can cause neuromuscular and musculoskeletal problems that impair gait and balance, and increase fall risk, reducing functional independence and quality of life.

Methods: A cross-sectional study was conducted among 46 adults aged 30–70 years with head and neck cancer, undergoing active treatment (chemotherapy, radiotherapy, surgery, or combined therapy). Individuals with pre-existing neurological or orthopedic conditions affecting mobility were excluded. Gait and balance were assessed using the Timed Up and Go (TUG), 10-Meter Walk Test (10MWT), Mini-Balance Evaluation Systems Test (Mini-BESTest), Dynamic Gait Index (DGI), and Falls Efficacy Scale–International (FES-I). Descriptive statistics were used to summarize outcomes. Pearson correlation assessed associations between age and functional measures, while independent t-tests compared gait and balance parameters between early and advanced disease stages.

Results: The mean TUG time was 9.25 ± 3.27 seconds, indicating mild mobility impairment. The Mini-BES Test mean score was 14.52 ± 6.76, suggesting moderate balance deficits. Mean FES-I score was 37.96 ± 14.13, reflecting moderate fear of falling. The mean gait speed on the 10MWT was 0.87 ± 1.78 m/s, with 63% of participants walking below age-normative values. The DGI mean score was 13.36 ± 6.31, indicating increased fall risk. Age demonstrated a significant negative correlation with Mini-BES Test scores ($p < 0.05$) and a positive correlation with TUG time ($p < 0.05$). No statistically significant difference was observed in TUG performance between early and advanced disease stages ($p = 0.98$).

Conclusion: Gait and balance impairments are highly prevalent among patients undergoing treatment for head and neck cancer, with deficits being more strongly associated with age than disease stage. Early identification and targeted physiotherapy interventions focusing on balance training and fall prevention are essential components of comprehensive oncological rehabilitation.

Keywords: Head and neck cancer, gait, balance, falls.

Journal of Clinical and Biomedical Sciences

OP_S2_13

A Randomized Study of Diclofenac Rectal Suppository versus Transdermal Patch for Post-Operative Analgesia in Cesarean Delivery

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Abstract

Background: Post-operative pain following lower segment cesarean section (LSCS) can hinder early ambulation, breastfeeding, maternal comfort, and mother–infant bonding, while increasing opioid use and related adverse effects. Diclofenac is widely used in multimodal analgesia, but the most effective route of administration in obstetric patients remains debated. Rectal suppositories and transdermal patches offer alternative routes that may provide sustained analgesia with minimal systemic effects.

Methods: This prospective, randomized, single-blind comparative study included 36 ASA I–II parturients aged 18–40 years undergoing LSCS under spinal anesthesia. Participants were randomized into two groups: Group R (n=18) received diclofenac sodium 100 mg rectal suppository, and Group T (n=18) received diclofenac 100 mg transdermal patch, both administered 5 minutes after skin closure. Post-operative pain was assessed using the Visual Analogue Scale (VAS) at 2, 6, 12, 24, and 48 hours. Duration of analgesia, time to first rescue analgesic, total rescue analgesic consumption, adverse effects, maternal satisfaction, and neonatal APGAR scores were recorded and analyzed.

Results: Group R demonstrated significantly longer duration of analgesia and delayed requirement for rescue analgesics compared to Group T ($p<0.05$). VAS scores were consistently lower in the rectal suppository group at all time points. Total rescue analgesic consumption at both 24 and 48 hours was significantly reduced in Group R. Neonatal outcomes, including APGAR scores, were comparable between groups, and no significant adverse effects were observed. Maternal satisfaction scores were higher in the rectal suppository group.

Conclusions: Diclofenac 100 mg administered as a rectal suppository provides superior and longer-lasting post-operative analgesia compared to the transdermal patch following cesarean delivery, with improved maternal satisfaction and comparable safety. Rectal diclofenac may be a more effective option for post-cesarean pain management within multimodal analgesic protocols.

Keywords: Cesarean Section, Post-operative Analgesia, Diclofenac, Rectal Suppository, Transdermal Patch, Visual Analogue Scale, Maternal Satisfaction

Journal of Clinical and Biomedical Sciences

OP_S2_14

Effect of Gestational Weight Gain and Body Mass Index on Fetomaternal Outcome: A Cross Sectional Study

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Abstract

Objectives: This study aimed to determine the pre-pregnancy body mass index (BMI) and total gestational weight gain (GWG) in women with singleton intrauterine pregnancies. Furthermore, it sought to evaluate the association between these factors and adverse fetomaternal outcomes.

Materials and Methods: A cross-sectional study was conducted involving 67 pregnant women aged 18 to 40 years with a BMI between 18 and 40 kg/m². Participants were included based on documented height and weight from the early first trimester. Women with multiple gestations, chronic hypertension, pre-existing diabetes, hypothyroidism, or those on antidepressants were excluded. Data were analyzed using Chi-square tests to determine the statistical significance of associations between BMI, GWG, and fetomaternal outcomes.

Results: The majority of subjects were aged 21–30 years (76.12%) and had a pre-pregnancy BMI of <25 kg/m² (62.69%). Most participants gained between 5 and 15 kg during pregnancy (79.11%). Maternal complications occurred in 19.4% of the total cases, including gestational hypertension (7.46%), pre-eclampsia (4.48%), and gestational diabetes (4.48%). The lower segment cesarean section (LSCS) rate was notably high at 80.60%. Statistical analysis revealed no significant association between pre-pregnancy BMI and fetomaternal outcomes ($p = 0.348$), nor between total gestational weight gain and adverse outcomes ($p \approx 0.80$).

Conclusion: Although maternal and fetal complications were observed across various BMI and weight gain categories, this study did not find a statistically significant correlation between pre-pregnancy BMI or gestational weight gain and adverse fetomaternal outcomes within the sampled population. The high rate of surgical interventions (LSCS) warrants further investigation into contributing clinical factors beyond BMI and weight gain.

Keywords: Gestational Weight Gain, Body Mass Index, Fetomaternal Outcome, Cross-Sectional Study, Pregnancy Complications.

Abstracts of Poster Presentations

Faculty

Journal of Clinical and Biomedical Sciences

PP_F_01

Efficacy of a Software *Nutra Glyx* on Nutraceutical Recipes Incorporated with Selected Medicinal Plants for Diabetes Mellitus

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Abstract

Background: In India, type II diabetes mellitus is occurring at a high rate as a result of lifestyle and dietary changes. Dietary intervention is significant in the management of blood glucose alongside medical management. Traditional healthcare systems have been using indigenous medicinal herbs over centuries and many of them have a known hypoglycemic effect. Nonetheless, the lack of knowledge, instructions and systematic dietary setup continue to confine the frequent use of these herbs in everyday meals.

Methods: The purpose of the study was to come up with a user-friendly software based dietary management system that provides nutraceutical recipes made using the selected indigenous medicinal herbs and to test its efficacy in Type II diabetic participants. The medicinal herbs were authenticated, processed, and standardized as five, namely; Guava leaf (*Psidium guajava* L.), Long pepper (Piper longum L.), Sirukurinjan (*Gymnema Sylvestre* R.Br.), Naval seed *(Syzygium cumini* L.), and Kandankathiri (*Solanum Virginianum* L.). The hypoglycaemic effect of the recipes with incorporated herbs was determined based on a controlled dietary intervention among Type II diabetic women who consumed standardized chapati. Clinical efficacy was assessed using fasting and post prandial blood glucose levels. An interactive software *NutraGlyx* was designed based on a validated nutraceutical recipes and offered diabetes training, dietary advice, health monitoring, physical activity support and herbal recipe support. Diabetic and dietitians evaluated the usability and acceptability of the software.

Results: Recipes that included medicinal herbs had a significant decrease in the post-prandial blood glucose level as compared to the control diet. The *NutraGlyx* software was positively accepted by the users and helped to follow the dietary recommendations and self-monitoring behaviour more effectively.

Conclusion: The research indicates that incorporation of traditional medicine plants into a systematic software-based dietary management system is a viable and culturally acceptable remedy in aiding dietary self-management in Type II diabetes.

Keywords: Nutraceuticals, Aboriginal medicinal herbs, Dieting software, Type II diabetes, Glycaemic control.

Ph.D Scholars

Journal of Clinical and Biomedical Sciences

PP_S3_01

Revolutionizing nutrition research through artificial intelligence: Applications in precision and personalized nutrition

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Abstract

Artificial intelligence (AI) is rapidly transforming nutrition research by enabling a shift from population-based dietary guidelines to precision and personalized nutrition approaches. By integrating and analyzing complex, high-dimensional data—including genetic, pheno-typic, metabolic, micro-biome, dietary, lifestyle, clinical, and environmental information. AI provides powerful tools to capture individual variability in dietary responses and health outcomes. This review synthesizes current evidence on the applications of AI in precision and personalized nutrition, highlighting key methodological advances and emerging use cases. AI techniques such as machine learning, deep learning, natural language processing, reinforcement learning, and explainable AI are increasingly employed across four major domains: Dietary assessment and monitoring, Prediction of health outcomes, Personalized dietary recommendation systems, and Nutritional genomics and Micro-biome analysis. These approaches enhance the accuracy, scalability, and adaptability of nutrition interventions while supporting early disease risk prediction and dynamic feedback-driven dietary guidance. Despite its promise, the implementation of AI in nutrition research faces significant challenges, including data quality and interoperability, algorithmic bias, ethical and privacy concerns, limited model interpret-ability, and the need for clinical validation. Explainable AI has emerged as a critical strategy to improve transparency, trust, and applicability in real-world nutrition practice. Overall, AI represents a trans-formative paradigm for advancing precision nutrition, with the potential to improve health outcomes at both individual and population levels, provided that technical, ethical, and transitional challenges are systematically addressed.

Keywords: Artificial intelligence, Precision nutrition, Personalized nutrition, Dietary assessment, Nutritional genomics, Microbiome analysis.

Postgraduate Students

Journal of Clinical and Biomedical Sciences

PP_S2_01

Dermatofibrosarcoma protuberans (DFSP) in parotid region: An Elusive Malignancy – A rare case report

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Abstract

Background: Dermatofibrosarcoma protuberans (DFSP) is a rare, low- to intermediate-grade soft tissue sarcoma of dermal origin, accounting for less than 1% of all soft tissue sarcomas. It is characterized by slow infiltrative growth, a high tendency for local recurrence, and low metastatic potential. DFSP most commonly involves the trunk and proximal extremities, while head and neck involvement is uncommon. Occurrence in the parotid region is extremely rare and often mimics primary salivary gland tumors, leading to diagnostic difficulty. Fibrosarcomatous transformation represents a more aggressive variant associated with increased recurrence and poorer prognosis.

Methods: We report a case of a 63-year-old female presenting with recurrent swelling in the right parotid region. Clinical examination, radiological imaging, fine needle aspiration cytology, histopathological evaluation, and immunohistochemical analysis were performed. The patient had a history of superficial parotidectomy and wide local excision for previous recurrences.

Results: Histopathology revealed an ill-circumscribed spindle cell tumor involving the deep dermis and subcutaneous tissue, composed of cells arranged in fascicles and focal herringbone patterns with moderate nuclear pleomorphism and increased mitotic activity. Tumor cells showed diffuse CD34 positivity and were negative for S100, SMA, desmin, STAT6, and SOX10. An increased Ki-67 proliferation index on recurrence indicated tumor progression. A diagnosis of DFSP with fibrosarcomatous differentiation was made.

Conclusion: DFSP of the parotid region is rare and diagnostically challenging. Accurate diagnosis requires histopathological correlation with immunohistochemistry. Complete surgical excision and long-term follow-up are essential, particularly in cases with fibrosarcomatous transformation.

Journal of Clinical and Biomedical Sciences

PP_S2_02

Hope Against Resistance: Activity Of Ceftazidime-Avibactam And Aztreonam In Colistin Resistant Klebsiella Pneumoniae.

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Abstract

Introduction: Antimicrobial resistance, is a major public health challenge globally and in India. Carbapenem-resistant *K. pneumoniae* (CRKP) infections are increasingly reported from tertiary care centres and are frequently associated with colistin resistance, which severely restricts therapeutic options and contributes to high morbidity and mortality. Newer β-lactam/β-lactamase inhibitor combinations such as ceftazidime–avibactam (CZA) show activity against many carbapenemase producers; however, CZA alone is ineffective against metallo-β-lactamase (MBL) producers. Aztreonam (ATM) is stable against MBLs but is hydrolyzed by other β-lactamases. Therefore, CZA + ATM combination therapy offers a rational strategy to overcome multiple resistance mechanisms, especially in extensively drug-resistant CRKP. Indian data regarding this combination in colistin-resistant isolates remain limited, prompting this study.

Methodology: In-vitro activity of ATM, CZA, and their combination was assessed using the disk elution broth method. Four tubes containing 5 mL of cation-adjusted Mueller–Hinton broth were prepared per isolate. Antibiotic disks were eluted by keeping at room temperature for 30–60 minutes. A standardized inoculum (0.5 McFarland) was prepared and 25 µL added to each tube. Tubes were incubated at 35–37°C for 16–20 hours and evaluated visually for turbidity. Synergy was interpreted when the ATM + CZA tube showed inhibition compared with ATM and CAZ alone.

Results: Among 17 colistin-resistant *K. pneumoniae* isolates tested, 12 (70.6%) demonstrated synergistic susceptibility to CZA + ATM. Three (17.6%) were susceptible only to CZA, and two (11.8%) only to ATM.

Conclusion: CZA + ATM showed strong in-vitro synergistic activity against colistin-resistant *K. pneumoniae* and may serve as an important carbapenem- and colistin-sparing option. Routine synergy testing and larger clinical outcome studies are warranted.

Keywords: Ceftazidime–avibactam (CZA), Aztreonam (ATM) CZA + ATM synergy, Synergy testing.

Journal of Clinical and Biomedical Sciences

PP_S2_03

Cross-Culture Adaptation of Urinary Incontinence Awareness and Attitude Scale into Kannada Language: A Reliability and Validity Study.

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Abstract

Background: Urinary incontinence is a significant health concern that often goes underreported due to social stigma and lack of awareness. The correlation between a patient's attitude toward the condition and their health-seeking behavior underscores the need for culturally sensitive assessment tools. Understanding these psychological and social dimensions is essential for devising effective management strategies and improving the quality of life for affected individuals.

Aim of the Study: To translate and cross-culturally adapt the Urinary Incontinence Awareness and Attitude Scale (URINAS) into Kannada (URINAS-K) and to evaluate its reliability and validity among the Kannada-speaking population.

Methodology: The adaptation process followed a standardized protocol involving five bilingual experts for initial forward translation into Kannada. A back-translation into English was subsequently performed by independent bilingual teachers to ensure linguistic accuracy. A comparative analysis was conducted between the back-translated version and the original scale to identify and rectify disparities. The final URINAS was then subjected to psychometric testing,
including content validity assessment by a panel of medical professionals and internal consistency testing for reliability.

Results: The translated URINAS-K underwent review by a panel of experts, where feedback regarding linguistic nuances was incorporated to enhance the tool's appropriateness. Preliminary testing showed that the instrument possessed strong content validity and internal consistency. The final refined version of the URINAS-K demonstrated that it is a stable and reliable instrument for measuring awareness and attitudes toward urinary incontinence in the Karnataka region.

Conclusion: The Kannada version of the Urinary Incontinence Awareness and Attitude Scale (URINAS)is a linguistically valid and reliable tool. It provides a valuable resource for clinicians and researchers to comprehensively evaluate public awareness and patient attitudes within the Kannada-speaking population.

Keywords: Urinary incontinence, Cross-cultural adaptation, Reliability, Validity, Kannada language.

Journal of Clinical and Biomedical Sciences

PP_S2_04

Antimicrobial Utilization in The Intensive Care Unit of a Tertiary Care Hospital

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Abstract

Background: Antimicrobial are used frequently in ICUs. The over use of WHO Watch and Reserve agents may be one of the causes for multidrug resistance. Audit of this will helps us know the trend and the cost.

Objectives: To determine utilization pattern of antimicrobials based on WHO prescribing indicators in Intensive care unit (ICU).
To determine relationship between Prescribed Daily Dose (PDD) and WHO Defined Daily Dose and cost of antimicrobial therapy in ICU.

Methods: This was a cross-sectional study conducted in ICU from May 2024 to October 2025 and the sample size was 634. Patients of either gender, aged 18-80 years, staying in ICU for 1-5 days were included. Data collected was analysed for Anatomical therapeutic chemical (ATC), Defined Daily Dose (DDD), WHO indicators, AWaRe classification, days of therapy (DOT) and cost.

Results: 650 patients included, 420 males and 230 females, mean age 54± 13 years. Patients received average of 2 antimicrobials , 100% were injectables. 43.4% were from WHO essential medications. Most common Watch agents used were ceftriaxone (46%), meropenem (40%), and piperacillin-tazobactam (13%), primarily administered for infective exacerbation of COPD (46%) and pneumonia (34%), organophosphorus poisoning (10%), cerebrovascular accidents (5.3%), fracture (3%) and laparotomy (0.7%). The total DDD per 100 patient-days was 81.73, for a duration of 5 days. The de-escalation was followed wherever required. PDD/DDD ratio for ceftriaxone 1.0, meropenem 0.67, piperacillin-tazobactam 0.64, metronidazole 1.0, with average ratio being 0.83. Pantoprazole was administered to prevent stress ulcer. The cost of antimicrobials in INR per patient for 5 days was; ceftriaxone 1,250, meropenem 11,230 and piperacillin-tazobactam 3,360.

Conclusion: The most common antimicrobial used in ICU was ceftriaxone and indication being infective COPD. The overall use of Watch agent, DDD/100 patient-days was 82. PDD/DDD ratio was below unity indicating de-escalation practices. The cost of meropenem was highest.

Keywords: Intensive care unit, Antimicrobial utilization, Prescribed daily dose, Defined daily dose.

Journal of Clinical and Biomedical Sciences

PP_S2_05

Comparison of usage of proton pump inhibitors: Self-administration versus prescription, a cross-sectional study

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Abstract

Background: Self-medication is common in India with prevalence 8.3% to 92%. Proton pump inhibitors(PPIs)are used for gastritis and dyspepsia, based on advice from friends, family members, pharmacists, or internet. Many users are not aware of side effects like headache, risk of fracture, diarrhoea. This study aimed to determine PPI usage patterns, prescription versus self-medication and assessed user's knowledge regarding side effects.

Methods: A cross-sectional study was conducted over 6-months in local pharmacies around Kolar after approval of protocol by Central Ethics Committee. Participants visiting pharmacies for PPIs either by prescription or self-medication were interviewed using a proforma after obtaining written informed consent and were followed up via telephone after one week. Data was analysed and expressed as percentages, chi square test done, P-value < 0.05 significant.

Results: The data of 510 participants was analysed, of whom 170 obtained PPIs through prescriptions and 340 through self-medication. The prescription group had 94 males and 76 females(mean age 43.92 ± 20 years), and self-medication had 195 males and 145 females(mean age 44.16 ± 20 years). Among prescription users, 66% adhered to consultant's instructions to complete the course. Self-medication users relied on pharmacists(77%), prior medical advice(14%), friends/family(6%), and internet(3%) for procuring PPIs. 66% of participants with prescription and 71% without prescription considered it to be safe for use. 89% of prescription users and 90% of self-medicators were not aware of the long-term side effects. 88% of participants with prescription knew PPIs should be taken on an empty stomach but in self-medication group only 40% were aware. The adverse effects reported were 2% in prescription versus 18% in self-medication.

Conclusion: Prescription users had better knowledge regarding drug intake and reported fewer adverse effects, whereas in self-medication there was inappropriate use and experienced more adverse effects. Participants in both groups had limited awareness of long-term adverse effects.

Keywords: Proton pump inhibitors, Self-medication, Prescription

Journal of Clinical and Biomedical Sciences

PP_S2_06

Black Tumor in the Wrong Place: Primary Malignant Melanoma of Rectum – A Rare Case Report

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Abstract

Introduction: Malignant melanoma of the rectum is a rare, aggressive neoplasm arising from melanocytes located in the anorectal mucosa. It accounts for <1% of all melanomas and about 1–2% of anorectal malignancies. It usually presents in the 5th to 7th decade and is female predominant. The lesion occurs more commonly in anal canal than rectum proper. The malignancy usually presents as rectal bleeding along with altered bowel habits, pain and tenesmus accompanied by weight loss. It is often misdiagnosed as Haemorrhoids or Adenocarcinoma in the Rectum.

Case details: A case of 76-year-old male came with complaints of mucoid discharge per rectum associated with pain during defecation. Diagnosis is confirmed on histopathology and immunohistochemistry. Histopathology revealed pleomorphic malignant cells arranged in nests, sheets, and singly, with areas of melanin pigment incontinence. Immunohistochemistry showed strong positivity for S-100, HMB-45, and Melan-A, confirming the diagnosis of primary malignant melanoma of the rectum.

Conclusion: Rectal melanoma, though rare, is an aggressive and often overlooked malignancy with poor outcomes. Definitive diagnosis hinges on histopathology complemented by immunohistochemistry, underscoring the need for heightened clinical and pathological suspicion for early intervention.

Keywords: Rectal melanoma; Immunohistochemistry; S-100; HMB-45; Melan-A

Journal of Clinical and Biomedical Sciences

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A Positive Pregnancy Test with a Malignant Twist: Mixed Ovarian Germ Cell Tumor Mimicking Ectopic Pregnancy

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Abstract

Background: Malignant ovarian germ cell tumors (MOGCTs) are uncommon neoplasms that predominantly affect adolescents and young women. Their clinical presentation is variable. However, they may present as an adnexal mass accompanied by elevated serum beta-human chorionic gonadotropin (β-HCG) levels, thereby closely resembling the presentation of an ectopic pregnancy. We report a case of 15yrs young female presenting with a complaint of acute pain abdomen.

Case Report: A 15-year-old female presented with Acute abdominal pain of one day duration associated with vomiting, along with a history of generalized weakness for one month and irregular menstrual cycles. Ultrasonography demonstrated a normal-sized uterus with an endometrial thickness of 8.6 mm and a heterogeneous hyperechoic right adnexal lesion measuring 3.8 × 3.6 × 3.5 cm, accompanied by surrounding free fluid with internal echoes and thin septations; The right ovary was not visualized separately, while the left ovary was normal. In view of these imaging findings and a positive urine pregnancy test, a provisional diagnosis of ruptured right adnexal ectopic pregnancy with mild to moderate ascites was considered. However, histopathological examination of the right ovarian lesion revealed features of a poorly differentiated malignant neoplasm, with differential diagnosis of Mixed germ cell tumor, Non-gestational choriocarcinoma, and Surface epithelial tumor with choriocarcinomatous differentiation was given. Subsequent Immunohistochemical analysis confirmed the diagnosis of a Mixed ovarian germ cell tumor composed of dysgerminoma and choriocarcinoma components.

Conclusion: This case underscores the need to consider malignant mixed ovarian germ cell tumors in the differential diagnosis of adnexal masses in adolescents, particularly when clinical and biochemical findings mimic ectopic pregnancy. The rare presence of dysgerminoma and choriocarcinoma elements within such tumor has important implications for tumor pathogenesis and therapeutic planning. A comprehensive histopathological and immunohistochemical evaluation remains essential for establishing an accurate diagnosis and ensuring appropriate management.

Keywords: Mixed Germ cell tumor, Ectopic Pregnancy, dysgerminoma and choriocarcinoma.

Journal of Clinical and Biomedical Sciences

PP_S2_08

Assessment of External and Internal Environment of Anganwadi Centres: A Community-Based Cross-Sectional Study

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Abstract

Background: Anganwadi Centres (AWCs) are the backbone of service delivery under the Integrated Child Development Services (ICDS) scheme, providing nutrition, preschool education, and health services to children, pregnant women, and lactating mothers. The physical environment of AWCs, both external and internal, plays a crucial role in ensuring safety, hygiene, and effective programme implementation. However, evidence on the functional adequacy of AWC environments at the district level remains limited. This study aimed to assess the external and internal environmental conditions of AWCs in Kolar district, Karnataka.

Methods: A community-based cross-sectional study was conducted among 132 Anganwadi Centres selected using probability proportional to size sampling across six taluks of Kolar district. Data were collected through direct on-site observation using a pre-tested structured checklist based on recommended ICDS standards. External environment parameters included site location, drainage, refuse dumping, open space, and ventilation obstruction, while internal environment assessment covered building characteristics, space adequacy, ventilation, lighting, kitchen facilities, and smoke outlets. Data were analysed using SPSS version 22, and results were expressed as frequencies and percentages.

Results: Most Anganwadi Centre buildings were older than 10 years (79.5%). A majority were located on elevated sites (67.4%), had independent street access (59.1%), and were away from breeding places (78.8%) and major nuisances (84.8%). However, refuse dumping around centres (41.7%), lack of open space (50.8%), and obstruction to lighting and ventilation (36.4%) were notable concerns. Internally, most centres were pucca structures (92.4%) and government-owned (72.7%). While adequate window area and lighting were observed in over two-thirds of centres, overcrowding (36.4%), absence of cross-ventilation (41.7%), and lack of smokeless cooking facilities (62.1%) were identified as key gaps.

Conclusions: Although structural infrastructure of Anganwadi Centres in Kolar district shows considerable improvement, significant deficiencies persist in external sanitation, space availability, ventilation, and indoor environmental safety. Periodic infrastructure audits, targeted upgrades, and strengthened intersectoral coordination are essential to ensure safe, child-friendly environments and effective ICDS service delivery.

Keywords: Anganwadi Centres, External Environment, Internal Environment, Infrastructure Assessment.

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PP_S2_09

A Black Lesion with a Grim Prognosis: Malignant Melanoma of the Oral Cavity

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Abstract

Background: Primary malignant melanoma of the oral cavity is a rare and highly aggressive neoplasm arising from melanocytes of the oral mucosa, accounting for only a small fraction of all melanomas. Globally, malignant melanoma represents approximately 1–4% of all malignant tumors, with cutaneous melanoma accounting for the vast majority of cases while mucosal melanomas constitute approximately 1–3% of all melanomas. In India, the tumor is exceedingly uncommon. The hard palate and maxillary gingiva are the most frequently involved sites, reflecting the predilection of the disease for keratinized oral mucosa.

Case Details: A 72-year-old female patient came with complaints of growth over the hard palate since 1 year & associated with pain over the growth since 6 months. Patient noticed a growth over the hard palate on the right side which was insidious in onset, gradually progressive, gradually progressed to attain current size associated with pain over the growth since 6 months which was insidious in onset gradually progressive, burning type, non-radiating. On examination, there was pigmented proliferative growth measuring 4x5cm involving the hard palate. The growth is firm to hard in consistency, irregular surface, doesn't bleed on touch, no sinuses noted. Grossly , identified a proliferative growth in the hard palate measuring 4.5x3x2cm & the bone overlying tumor looks involved.

Results: As clinically the case presented as pigmentary growth the surgery was planned. Right infrastructural maxillectomy + bilateral SOHND + palatectomy + tracheostomy was done.
Microscopically, tumor shows pleomorphic tumor cells arranged in sheets , clusters. Tumor cells are round to spindle in shape with pleomorphic nuclei , vesicular chromatin , prominent nucleoli and moderate amount of cytoplasm. Tumor shows areas of melanin pigment and increased mitotic activity (>10/hpf). Tumor shows multinucleated tumor giant cells.
Immunohistochemistry of HMB45 , SOX10 & S100 - Positive
Impression: Features are consistent with malignant melanoma –pT4aN1Mx- Stage IVA

Conclusion: Oral malignant melanoma is a rare but highly aggressive neoplasm with distinct biological behavior compared to cutaneous melanoma and remains uncommon and often underdiagnosed. The disease frequently presents at an advanced stage due to its asymptomatic early course and variable clinical appearance. A significant proportion of cases are amelanotic, leading to frequent misdiagnosis and delayed treatment. Histopathology supported by immunohistochemistry is essential for accurate diagnosis. Adjuvant radiotherapy and systemic therapies play supportive roles in advanced disease.

Keywords: Hard Palate Melanoma, Primary Mucosal Melanoma, Pigmented Oral Lesion, Mucosal Melanoma of Head and Neck

Journal of Clinical and Biomedical Sciences

P_S2_10

Frozen in Time: A Childhood Lamellar Cataract Unmasked in Adulthood

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Abstract

Purpose: To report a rare case of bilateral lamellar cataract diagnosed in adulthood and highlight the importance of recognizing developmental cataract morphologies in older patients.

Observations: A 52-year-old female presented with progressive painless diminution of vision in both eyes for two years. Slit-lamp examination revealed bilateral lamellar cataract. The patient underwent sequential small incision cataract surgery with posterior chamber intraocular lens implantation. Postoperative BCVA improved to 6/9 in both eyes.

Conclusion: Developmental lamellar cataracts can remain subclinical and present in adulthood. Recognition of characteristic morphology and relevant family/genetic history aids management and counseling.

Journal of Clinical and Biomedical Sciences

PP_S2_11

When The Adrenal Deceives: Metastatic Intrahepatic Cholangiocarcinoma Mimicking Pheochromocytoma

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Abstract

Background: Secondary tumors of the adrenal gland are frequently encountered in advanced malignancies; however, metastatic involvement by intrahepatic cholangiocarcinoma (ICC) is distinctly uncommon. Diagnostic challenges arise when metastatic tumors exhibit radiologic and biochemical features mimicking functional adrenal neoplasms. We present a rare case in which histomorphology and immunohistochemistry were decisive in establishing the correct diagnosis.

Case Report: A 57-year-old male presented with bilateral adrenal masses detected incidentally on imaging. Biochemical evaluation revealed elevated plasma and urinary metanephrines, and Ga-68 DOTANOC PET-CT demonstrated significant uptake in the left adrenal lesion, strongly suggesting pheochromocytoma. Gross examination of the resected adrenal gland showed a well-circumscribed grey-white lesion. Microscopy revealed an infiltrative malignant epithelial neoplasm composed of markedly pleomorphic cells with brisk mitotic activity, and associated desmoplastic stroma. Adjacent adrenal cortex was unremarkable. Immunohistochemistry demonstrated diffuse positivity for CK7, CK19, and CEA with patchy CA19-9 expression, while CK20, CDX2, TTF-1, and Napsin A were negative, effectively excluding colorectal, pulmonary, and primary adrenal cortical neoplasms. Clinicoradiologic correlation supported the diagnosis of metastatic intrahepatic cholangiocarcinoma.

Conclusion: This case underscores the indispensable role of detailed histopathological evaluation and targeted immunohistochemistry in the assessment of adrenal masses with atypical clinical and biochemical profiles. Recognition of rare metastatic patterns and potential diagnostic mimics is essential to prevent misclassification and guide appropriate patient management.

Keywords: Adrenal metastasis, Intrahepatic cholangiocarcinoma, Pheochromocytoma mimic, Histopathology, Immunohistochemistry

Journal of Clinical and Biomedical Sciences

PP_S2_12

When Benign Meets Malignant: Decoding Uterine Adenosarcoma

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Abstract

Background: Uterine sarcomas are rare malignant tumours with diverse histologic patterns and aggressive potential. Advances in World Health Organization (WHO) classification have improved diagnostic accuracy by refining tumour categories and excluding borderline entities. However, predicting clinical behaviour remains challenging, and standardized treatment guidelines are lacking.

Introduction: Adenosarcoma is an uncommon biphasic uterine malignancy composed of benign epithelial elements and malignant stromal tissue. It accounts for a small proportion of uterine sarcomas and typically presents as early-stage, low-grade disease. Despite this, recurrence and metastasis may occur, particularly in the presence of sarcomatous overgrowth, deep invasion, or extra-uterine spread. While surgery is the primary treatment, the roles of lymph node dissection and adjuvant therapy remain unclear, highlighting the need for better prognostic stratification.

Case Report: A 60-year-old woman, postmenopausal for 14 years, with a history of tubectomy 38 years ago, presented with bleeding per vagina and lower abdominal pain for one month.
Pelvic ultrasonography revealed a bulky uterus with disruption of the endometrial stripe and altered myometrial echotexture. MRI pelvis showed a bulky uterus with an endometrial polypoid lesion -FIGO stage IA disease.
The patient subsequently underwent total laproscopic hysterectomy with bilateral salphingo oopherectomy. Histopathological examination of the specimen revealed features consistent with uterine adenosarcoma.

Conclusion: Uterine adenosarcoma is a rare but clinically important tumour with variable behaviour. Prognosis is generally favorable in early-stage disease but worsens with high-risk histologic features. Accurate classification and identification of prognostic factors are essential for appropriate management. Further studies are needed to define optimal staging and treatment strategies.

Key Words: Uterine adenosarcoma; Uterine sarcoma; Sarcomatous overgrowth; Prognostic factors; WHO classification; Treatment outcomes.

Journal of Clinical and Biomedical Sciences

PP_S2_13

AI-Driven Predictive Risk Modelling to Strengthen Food Safety in Hospital Food Services

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Abstract

Background: Hospital food services include a crucial part of nutritional therapy and patient care, which is food safety. Infection risks and longer hospital stay can also be attributed to contaminated meals, which threaten the success of therapeutic diet, and cause extended hospitalization, especially in immunocompromised and severely ill patients. Traditional methods of hospital food safety are based on regular inspections and the periodic audit, which are rather reactive and do not identify risks in real time to a significant extent. Hospital food service surveillance through the integration of artificial intelligence could allow proactive detection and prevention of food contamination events.

Methods: The predictive framework was formulated based on the data (two years of data related to food safety audit records and kitchen operational data of tertiary care hospitals). Parameters consisted of temperature records of food holding units, cold-chain records, time that meals were transported, compliance with hygiene of staff, and frequency of working with therapeutic diets. Random Forest and Gradient Boosting Machine algorithms were used to characterize the level of contamination risk. The performance of the models was assessed with the help of 10-fold cross-validation.

Results: The predictive model had an overall accuracy of 89 percent and a sensitivity of 91 percent of predicting high risk food handling situations. The most significant predictors of the risk of contamination were temperature variation during food holding and late transportation of meals. High risk levels were significantly linked to increased workload on the staff and decreased hygiene compliance ($p < 0.05$). Real-time alert dashboard implementation minimized deviations in response time related to food safety.

Conclusions: Predictive risk modelling using AI can be used to reinforce food safety in hospital food services. The system assists dieticians to prioritize high-risk preparation of therapeutic diets, coordination with the food service teams, and increased patient safety. Change in approach
by transitioning to reactive monitoring through inspection to proactive risk prediction would go a long way in enhancing the quality of nutritional care and the hospital infection control measures.

Keywords: The Artificial Intelligence, Hospital Food Safety, Predictive Risk Modelling, Therapeutic Diets, Dietetics, Patient Safety.

Journal of Clinical and Biomedical Sciences

PP_S2_14

Adnexal Mass in Pregnancy

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Abstract

Background: Adnexal masses during pregnancy present diagnostic and therapeutic challenges due to their potential impact on maternal and fetal outcomes. While many are benign and resolve spontaneously, some pose risks such as torsion, rupture, malignancy, or obstetric complications, necessitating careful management.

Methods: This case series included seven pregnant patients diagnosed with adnexal masses between January 2023 and November 2025. Patients were identified via clinical presentation, imaging findings, and surgical records. Data collected encompassed demographics, clinical features, laboratory and imaging studies, surgical interventions, histopathological diagnoses, and maternal and fetal outcomes.

Results: The patients ranged from 19 to 26 years of age, presenting between 7 and 23 weeks of gestation. Abdominal pain was the predominant symptom. Ultrasound with color Doppler was the primary diagnostic tool, supplemented by MRI in select cases. Surgical management, including laparoscopic cystectomy, laparotomy, salpingo-oophorectomy, and paraovarian cystectomy, was performed based on symptoms, suspicion of malignancy, or cyst persistence/enlargement. Histopathology revealed mature teratoma, hemorrhagic cysts with torsion, mucinous cystadenocarcinoma (FIGO IA), benign cysts, and paraovarian cysts. Maternal complications were minimal, with one surgical site infection and manageable anemia; no maternal mortality or fetal loss occurred. Fetal well-being was maintained in all cases.

Conclusions: Adnexal masses in pregnancy demonstrate diverse pathology and clinical presentations. Early diagnosis using ultrasound and selective MRI, combined with timely individualized surgical intervention, can be safely accomplished without compromising fetal outcomes. Ovarian torsion remains a critical indication for urgent surgery. This series underscores the importance of multidisciplinary management and vigilant follow-up to optimize maternal and fetal health in this complex clinical scenario.

Keywords: Pregnancy, Adnexal Diseases, Ovarian Cysts, Ovarian Torsion, Laparoscopy

Undergraduate Students

Journal of Clinical and Biomedical Sciences

PP_S1_01

A Clinical Case Study of Audiological Sequelae of Temporal Bone Fracture Following Road Traffic Accident

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Abstract

Background: Temporal bone fractures can result in significant injury to the middle and inner ear structures. This case study presents the audiological findings and subsequent pattern of hearing recovery following a temporal bone fracture sustained in a road traffic accident. Early audiological evaluation and serial monitoring are essential for documenting recovery patterns and guiding further management. The case presentation emphasizes the significance of CT imaging in the diagnostic workup of audiological dysfunction post-trauma and the importance of serial assessment

Methods: A 27-year-old male sustained head trauma following a road traffic accident, resulting in a subarachnoid haemorrhagic component along the sulci of the left frontal and left occipital lobes, along with a right temporal bone fracture. The patient underwent comprehensive audiological evaluation over three follow-up visits. The assessment protocol included otoscopic examination, pure-tone audiometry, speech audiometry, immittance audiometry, tuning-fork tests, and vestibular evaluation to monitor auditory and balance function over time.

Results: The patient demonstrated progressive improvement in right-ear conductive hearing loss across successive audiological evaluations. Initial assessment demonstrated moderate conductive hearing loss in the right ear (55 dB HL) with a Type B tympanogram and absent acoustic reflexes, while the left ear showed hearing sensitivity within normal limits. At the two-week follow-up, right-ear thresholds improved to mild conductive hearing loss (37.5 dB HL). By the third visit, further improvement was observed (28.75 dB HL) though evidence of middle-ear pathology persisted. CT imaging of the temporal bone was instrumental in correlating these audiological findings with the underlying fracture pattern and middle-ear involvement, thereby reinforcing the diagnosis and guiding appropriate clinical management.

Conclusions: This case highlights the importance of CT imaging and serial audiological assessments in accurately diagnosing post-traumatic hearing impairment and monitoring recovery. A multidisciplinary approach with ongoing audiological follow-up is essential for optimizing functional recovery and achieving favorable long-term auditory outcomes in patients with temporal bone trauma.

Keywords: Temporal bone fracture, Conductive hearing loss, Audiological evaluation, Road traffic accident, Hearing recovery, CT imaging, Serial audiological monitoring.

Journal of Clinical and Biomedical Sciences

PP_S1_02

Exploring faculty and student perspectives on artificial intelligence in undergraduate medical education: A cross-sectional study of awareness, use and personalised learning impact

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Abstract

Background: Competency-based medical education (CBME) in India emphasizes learner-centred training and demonstrable outcomes. Artificial intelligence (AI) has the potential to enhance medical education by supporting self-directed learning, critical thinking, and efficient access to information. Understanding the awareness, perceptions, and ethical concerns of medical students and faculty is essential for effective curricular integration of AI.

Methods: A single-centre cross-sectional study was conducted among undergraduate MBBS students (Phase I to internship) and faculty involved in undergraduate teaching. Data were collected using a validated, structured online questionnaire assessing demographics, AI awareness, usage patterns, perceptions (including ethical concerns), and opinions on curriculum inclusion. Responses were recorded using descriptive items and five-point Likert scales. Data were analysed using descriptive statistics and Chi-square or Fisher's exact tests, with $p < 0.05$ considered statistically significant.

Results: A total of 444 students and 79 faculty members participated. Moderate familiarity with AI was reported by 44.6% of students and 48.1% of faculty, while formal training was limited (8.8% and 19%, respectively). Students used AI tools significantly more frequently than faculty ($p < 0.00001$), primarily for academic learning, whereas faculty use focused on teaching preparation and research. Students more often perceived AI as enhancing understanding and providing faster access to information, while faculty expressed greater scepticism regarding its role in conceptual clarity ($p = 0.0019$). Ethical concerns related to data privacy, reliability, accuracy, and overdependence were high among both groups. Most students (70.5%) and faculty (73.4%) supported inclusion of AI in the undergraduate curriculum.

Conclusions: Medical students and faculty demonstrate moderate awareness and overall positive attitudes toward AI in medical education, despite limited formal training. Structured faculty development and formal curricular integration are essential to ensure ethical, effective, and complementary use of AI within CBME.

Keywords: Artificial intelligence, Medical education, Competency-based medical education educational technology, Ethics in artificial intelligence, Curriculum integration

Journal of Clinical and Biomedical Sciences

"Frameworks in Competency-Based Education: Competencies, Learning & Assessment,"

12th and 13th January 2026, ICHPE, SDUAHER, Kolar-563103

Abstracts of paper presentation

Journal of Clinical and Biomedical Sciences

Assessing the Perception of Self-Directed Learning Among First-Year MBBS Students: A Study from a Medical College in Northeast India

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Introduction: With the Application of Competency-Based Medical Education (CBME) in India, Self-Directed Learning (SDL) has developed as a key pedagogical approach to enhance medical students' autonomy, critical thinking, and lifelong learning skills. However, research on first-year MBBS students' perceptions of SDL, particularly in Northeast India, remains limited.

Objective: To assess Phase I MBBS students' perceptions of SDL and evaluate its impact on their learning outcomes at Churachandpur Medical College, Manipur.

Methods: A cross-sectional study was conducted among 86 Phase I MBBS students of 2024-2025 Batch. The study included three SDL sessions on "Physiology of the Autonomic Nervous System," with pre-test and post-test evaluations. A validated self-administered questionnaire measuring SDL capabilities across four domains was used. Data were analysed using SPSS Version 21, and Wilcoxon Signed-Rank tests were employed for pre and post-test comparisons.

Results: The mean pre-test score was 7.59 ± 2.63, while the mean post-test score was 11.40 ± 1.39 ($p < 0.001$), demonstrating a significant improvement in knowledge of the SDL topic. SDL scores ranged from 58 to 96, with 75% of students demonstrating high SDL ability. Students expressed strong intrinsic motivation (Mean = 4.58 ± 0.49) but reported challenges in self-monitoring and written communication.

Conclusion: SDL significantly enhanced students' knowledge acquisition and promoted self-regulated learning. While students demonstrated high motivation, targeted interventions are necessary to improve self-monitoring and communication skills. There is a need for integrating structured SDL strategies into medical curricula, particularly in resource-limited settings like Manipur.

Key words: Self-Directed Learning, Medical Education, Competency-Based Medical Education, First-Year MBBS, Northeast India

Journal of Clinical and Biomedical Sciences

Acquisition of Adaptive learning skill in Post-graduate Medical Education- A concept beyond competency

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Introduction: Learning in Medical is really outpacing the knowledge that can be gained during designated medical training. It is required to keep pace with expanding of new information rapidly. Medical training period and curricula have limitations so there should be as approach that can change the learning attributes and make conceptual change that can develop lifelong learning skill in Doctors. Adaptive learning mainly concerns with meta-cognition ability and application of knowledge at learning stage. Incorporation of new information is also required at certain stage of learning. This study aimed with developing concept of adaptive learning in post graduates in Pathology Department to make them lifelong learner and increase learning prospective.

Methodology: A quantitative study to perform by case based learning in post graduates(18) second year of Pathology Department. Detailed Case content was delivered initially. Students were divided in teams and different case scenario was given to each team of topic which is already covered by lecture. Discussion was conducted with the panel of faculties and each team has to represent their findings. Questionnaire divided into many sections given to students to observe the change perception. Feedback on learning attitudes will be taken from students.

Conclusion: Learning is not just acquiring competency of what is in curriculum but it is beyond this and to understand the ability of gain knowledge lifelong. Such adaptation in learning is required for the future doctors.

Journal of Clinical and Biomedical Sciences

An observational and interventional study to assess change in quality of Histopathology requisition forms filled by PG students of various clinical departments of a tertiary care hospital using Case Based Discussion as Teaching Learning technique

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Introduction: Case Based discussion(CBD) is widely used modality for teaching worldwide. Use of CBDs in filling Histopathology Requisition forms (HRFs) which are very crucial in providing information for appropriate & timely reporting can be studied since not much data is seen in the literature. Inadequately filled HRFs by PGs hampers quality of Reporting. CBDs can help them be aware of filling it correctly & improve on reporting due to lack of history, it might help decrease TAT & better patient care.

Methodology:70 students pursuing Clinical PGs (7 groups of 10 students each) who gave consent were enrolled. IEC/SRC obtained -27/09/2023.Pre-test was conducted for all students using 15(MCQs).The Case based scenarios were used specific to that speciality. CBDs were devised based on the findings of Preintervention audit of compliance. Post-test was conducted using the same MCQs. Students were requested to fill up the feedback to assess level of Motivation, Importance & knowledge in filling HRFs after CBDs. Feedback from the Pathologists regarding effectiveness of CBD as Intervention (TL method) was obtained. Preintervention Audit: We analysed total of 100 HRFs submitted in surgical Histopathology dept of teaching hospital over a period of 1month(August2023) to assess the degree of compliance of HRF & findings were noted. Intervention in the form of CBDs as teaching learning method was done. Postintervention: HRFs were analysed again (Randomization100) in the month of October 2023 & degree of compliance was noted

Results & Conclusion: Case Based Discussions for filling HRFs is a impactful teaching- learning tool for teaching PGs which increased knowledge, Importance & Motivation of filling appropriate HRFs & was highly significant in Post-test as compared to Pretest. Result of Post Intervention audit of compliance was markedly better & significant. All Pathologists posted in Histopathology during this study reported good level of improvement in filling of HRFs by PGs post CBDs in that month

Keywords: Case based discussion, Histopathology Requisition forms HRFs, Turn-around Time, Teaching Learning method

Journal of Clinical and Biomedical Sciences

The Pen and the Mind: Comparing the impact of poetry and traditional learning methods on medical students' reflective writing and empathy development

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Background: Empathy is a critical part of medical practice and studies show that there is a decline in empathy during medical training. Poetry as a Narrative medicine tool has shown promise in the increment of reflective capacity and emotional awareness. This study aimed to compare the depth of student reflections when exposed to poetry vs traditional psychiatry teaching and to also assess the changes in self-reported empathy levels in both the groups.

Methods: 24 students from IIIrd MBBS, were randomized into 2 groups and received 3 sessions of Poetry and Traditional Teachings each. Students wrote reflections at the end of every session and also empathy was evaluated on Jefferson Scale for Empathy (JSE) at different times during the study. Total 6 teachers were involved and every teacher took one traditional and one poetry session. Mixed-method approach combining quantitative and qualitative data was used.

Results: The total group showed a 9.10% increase in JSE scores from baseline to after 6 sessions, indicating an overall improvement in empathy scores. Though statistically not significant, percentage improvement in self-awareness of empathy is more in poetry sessions. Qualitative data is currently under progress.

Conclusion: Overall empathy improvement seen in all students as they have mentioned in reflection writing and also on JSE scores. Poetry can be used as one of the pedagogical tools to teach, cultivate and enhance empathy among health care professionals.

Key words: Empathy, reflective writing, medical students, poetry.

Journal of Clinical and Biomedical Sciences

A Flashcards – Based Edutainment Approach for Bioethics Education In Dentistry

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Introduction: Education can be effective when combined with entertainment making it edutainment and this includes, drama, flashcards, board games, etc. Flashcards are handy, valuable, useful, and easy to carry at various locations.

Aim: The aim of this study is to use flash card designed for clinical undergraduate student to learn bioethics and its application.

Settings and Design: Experimental double-blinded study was conducted to use educative flashcards on Bioethics and its application, designed for clinical undergraduate student.

Material and Methods: Participants were divided into three groups, Group 1 was traditional teaching method where classes was taken for 1 hr, for Group 2 only flashcard s were given, and for Group 3 classes was taken and flashcards were given. After a week, semi constructed pretested questionnaire was given to all the participants.

Statistical Analysis: Data were collected, coded and fed in SPSS (IBM version 23) for further analysis.

Results: Nearly 43.3%, 13.3% and 30% of them from Group 1, 2 and 3, respectively, thought that professionalism was same as bioethics ($P<0.05$, $X2=5.599$). Nearly 86.7%, 96.7% and 100% of them from Group 1,2 and 3 respectively knew it was important to highlight the cost involved before taking consent for any procedure ($P<0.05$, $X2=5.506$). Only, 53.3%, 53.3% and 86.7% of them from Group 1, 2 and 3 respectively knew, that there is an ethical committee in this institution.

Conclusion: Participants from Group 2 and 3 have fairly more knowledge compared to participants from Group 1 where majority of the answer were not right.

Journal of Clinical and Biomedical Sciences

Moral Mode of Education in Nursing: A Review of Ethical Frameworks, Teaching Approaches, and Moral Sensitivity Development

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Objectives: This review aimed to examine foundational moral development theories relevant to nursing education; identify traditional and contemporary ethics-teaching models; explore factors influencing moral sensitivity among nursing students; evaluate evidence-based educational interventions that enhance ethical competence; and highlight challenges and future directions in moral education.

Methods: A systematic review was conducted in accordance with PRISMA 2020 guidelines. Electronic databases including PubMed, Scopus, CINAHL, and Google Scholar were searched for English-language literature published between 2000 and 2025. Grey literature such as theses and reports was also reviewed. Studies addressing moral education, ethics teaching strategies, or moral sensitivity in nursing were eligible. Following screening and full-text assessment, 62 studies met the inclusion criteria. Data were extracted independently by two reviewers, and study quality was appraised using CASP, JBI, and MMAT tools. A thematic synthesis approach was employed due to methodological heterogeneity.

Results: The review found that classical moral development theories—particularly those proposed by Piaget, Kohlberg, and Gilligan—continue to underpin ethics education in nursing. Contemporary pedagogical approaches, including simulation-based learning, problem-based learning, reflective practice, debate, and digital platforms, demonstrated consistent positive effects on ethical reasoning and moral sensitivity. Moral sensitivity was influenced by personal values, cultural context, clinical exposure, mentorship quality, and emotional intelligence. Key challenges included inconsistent curriculum integration, limited faculty preparedness, cultural variability in ethical norms, and difficulties in assessing ethical competence.

Implications: The findings underscore the need for longitudinal integration of ethics across nursing curricula, greater emphasis on experiential and reflective learning, and systematic faculty development in ethics education. Incorporating emerging technologies such as virtual reality and AI-supported simulations, along with a focus on global health ethics and cultural humility, may strengthen future-ready ethical competence among nursing graduates.

Keywords: ethical education; nursing students; moral development; moral sensitivity; simulation; reflective practice

Journal of Clinical and Biomedical Sciences

Specialty Preferences Until Phase III MBBS Translate into Their Final Choice for Postgraduation: A Longitudinal Study

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Background: Almost every medical student aspires to do a postgraduation degree of their choice. A longitudinal study that captures their preferences during MBBS until they join postgraduation could provide useful information to understand this complex decision. Our objective was to analyze the influence of specialty preferences at various stages of their MBBS course in their final choice for postgraduate seat selection.

Methods: We used a validated and published questionnaire developed by us in our previous studies. We collected data from one batch of medical students on demographic information, their first, second, third preferences for a specialty and three least likely preferences at each phase of the MBBS course. The study was approved by the Institutional Review Board. All participants were enrolled into the study after obtaining a written informed consent.

Results: Out of the 100 eligible students in the batch, 18 refused to participate or withdrew from the study. Complete data on specialty preferences at all time points were available for 60 participants. Data analysis was done for 28 students out of 37 students from the batch who joined our institution for postgraduation last year. We found that 50% (n = 14) of these students chose their specialty for postgraduation which were indicated as their first, second, or third preferences on at least one of the three time points. The remaining students (n=11) chose a specialty that did not feature in any of their preferences and a few students (n=3) had joined the postgraduate degree in a specialty which featured in their list of non-preferences on at least one occasion.

Conclusion: We found that the final choice made by our students for their postgraduation was their preference in the first three years of their MBBS course in half of the students in this study.

Key words: Medical students; Career choice; Longitudinal study

Journal of Clinical and Biomedical Sciences

MD Biochemistry Program: Linking Competencies to Professional Roles

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Background: The curriculum for MD Biochemistry is vast ranging from basic molecular aspects of health and disease. The training program is variable with respect to the departments and faculty members present in an institution. In this concept paper, I would like to provide a general overview for competency-based training in MD Biochemistry course.

Methods: The first step is to identify and define the various roles of a qualified professional in MD Biochemistry. The next attempt is to provide training, conduct assessments, and provide feedback based on the identified roles. In each of the roles, specific skills can be identified which can be categorized as fundamentals, theory essentials, practical essentials, and advanced skills.

Results: The essential roles to be performed by a qualified professional in MD Biochemistry include to be a medical teacher, to be a laboratory professional, to be able to communicate and discuss with the clinicians at the interface of laboratory and patient care, to be a basic science researcher capable of conducting and critically appreciating biomedical literature, to be aware of the different requirements in resource-constrained settings, and to be able to function as an administrator in helping to run the academic and clinical laboratory sections of Biochemistry.

Conclusion: The graded approach in training in various roles will provide a guideline for trainees to acquire the knowledge and skills during their course. It will also facilitate in developing a professional identity and focus areas for their future practice.

Key words: Biochemistry; Medical students; Postgraduate; Curriculum; Competencies

Journal of Clinical and Biomedical Sciences

Assessing Digital Adoption for Competency-Based Dental Education: A UTAUT Model Survey of Indian Dental Students

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Background: Digital technologies are transforming dental education by enhancing learning, assessment, and clinical practice. Their successful adoption depends on user acceptance, which the Unified Theory of Acceptance and Use of Technology (UTAUT) effectively evaluate, and on aligning these tools with Competency-Based Dental Education (CBDE) to support outcome-driven curricula.

Objectives: To assess acceptance and readiness for the application of digital technologies among Indian dental students using the UTAUT model, and to explore how this readiness can support the implementation of Competency-Based Dental Education (CBDE) in undergraduate dentistry.

Materials and method: A cross-sectional survey was conducted among I to IV BDS students in India using a pre-validated 31-item closed-ended descriptive and UTAUT-based questionnaire to assess perceptions of digital learning tools and their relevance to competency-oriented training. Data analysis focused on six UTAUT constructs: performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating conditions (FC), behavioural intention (BI), and usage behaviour (UB), and their implications for integrating digital tools into CBDE-aligned teaching and assessment.

Results: The study included 506 Indian dental students (281 females, 81 males; mean age 21.6 ± 1.8 years). Instructional preferences showed that 36.8% favoured interactive PowerPoint, 32.4% preferred diverse digital tools, and 18.7% chose traditional chalk-and-talk methods. Mean scores for all UTAUT constructs exceeded 3.5, indicating positive attitudes towards technology; BI (4.28 ± 0.68) and PE (4.20 ± 0.70) were highest, suggesting strong motivation and perceived learning benefits. EE (3.99 ± 0.78) and SI (3.92 ± 0.79) reflected favourable perceptions of ease of use and peer/faculty influence, while FC (3.65 ± 0.84) highlighted institutional gaps in infrastructure and support. UB (4.04 ± 0.73) confirmed frequent engagement with digital tools, indicating good potential for embedding them into CBDE activities such as skills training, formative feedback, and competency tracking.

Implication of the Research: Results demonstrated high acceptance and frequent use of digital tools, indicating strong readiness to engage with technology-enhanced, competency-oriented learning environments. Strengthening institutional FC and intentionally mapping digital resources to defined competencies can support effective implementation of CBDE in undergraduate dental curricula.

Journal of Clinical and Biomedical Sciences

Skill Mastery Journey: Assessment of Skill Competence Retention across Phases in Medical Education

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Background: Competency-Based Medical Education (CBME) emphasizes the early acquisition and certification of essential clinical skills through structured training and assessment. Although CBME has been implemented nationwide, there is limited evidence on the longitudinal retention of these certifiable skills as students' progress through different phases of the MBBS curriculum. Moreover, insights into how students and faculty perceive the skill certification programme are essential to judge its educational value and practical feasibility. Evaluating long-term skill retention alongside stakeholder perceptions can provide critical evidence to refine CBME strategies, strengthen continuity of skill training, and enhance the effectiveness of competency-based assessment across phases of medical education.

Methods: A cross-sectional study was conducted among undergraduate medical students and teaching faculty at Sri Siddhartha Institute of Medical Sciences & Research Centre. Skill retention was assessed using four OSCE stations; blood pressure recording, tracheal position assessment, fine touch examination, and biceps jerk elicitation—using structured checklists. Perceptions were obtained through a validated Likert-scale questionnaire administered electronically. Data were analysed using one-way ANOVA with Tukey's post-hoc test ($P < 0.05$).

Results: Eighty-eight students participated. Significant decline in retention was observed for blood pressure recording, fine touch sensation, and biceps jerk elicitation across senior batches ($P < 0.05$), indicating progressive decay of psychomotor skills with increasing time since certification. Retention of tracheal position assessment remained comparatively higher, suggesting that simpler or predominantly tactile skills may be more stable. Students reported improved motivation, confidence, and preparedness for clerkship. Faculty supported the programme's alignment with CBME goals but highlighted limitations such as inadequate time, manpower, and resources for repeated assessments.

Conclusion: Skill certification enhances CBME outcomes, but long-term retention especially of complex psychomotor and affective competencies declines without structured reinforcement. Sustained competence requires periodic practice, continuous feedback, and stronger institutional support.

Keywords: CBME, OSCE, skill certification, clinical competence, medical education, skill retention.

Journal of Clinical and Biomedical Sciences

Use of AI-based Learning Tools Among MBBS Students: Awareness, Usage Patterns, and Perceptions – A Cross-sectional Study

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Background: Digital learning tools are increasingly being used by medical students to support academic activities. NMC CBME 2024 guidelines support the use of technology & AI in medical education right from the Foundation Course of MBBS students. However, limited evidence exists on how undergraduate medical students perceive and use these tools within the Indian medical education context.

Objectives: This study aimed to assess awareness, patterns of use, perceptions, and perceived challenges related to technology-assisted learning tools among MBBS students.

Methods: A cross-sectional study was conducted using a structured, self-administered online questionnaire among MBBS students. We collected information on demographic characteristics, awareness of learning tools, frequency and purpose of use, student perceptions assessed using a 5-point Likert scale, and perceived barriers or concerns. Skip logic was incorporated so that participants responded only to relevant sections. Interim analysis of the responses received to date was performed using descriptive statistics.

Results: Interim analysis included 104 responses. Most participants reported having regular access to internet-enabled devices (88.5%). Awareness of AI use in education was high (98.1%), and a large proportion were aware of AI tools used specifically for medical education (88.5%). ChatGPT and Google Gemini were the most commonly recognized tools. Majority respondents (92.4%) use AI-based learning tools for academic purposes, commonly for clarifying concepts, summarizing study material, answering MCQs, and assisting research. Overall perceptions towards AI-based tools were largely positive, particularly regarding understanding complex topics and academic improvement. However, concerns about accuracy of information, ethical issues, and over-reliance were frequently reported.

Conclusions: The interim findings suggest that technology-assisted learning tools are well integrated into students' academic routines and are generally perceived as helpful. The concerns expressed highlight the need for structured guidance, faculty involvement, and clear academic policies to encourage appropriate and responsible use. Final analysis will be completed prior to presentation.

Key words: Medical education, Competency-based medical education, Artificial intelligence, Undergraduate medical students, Learning tools

Journal of Clinical and Biomedical Sciences

From Objectives to Outcomes: Evaluating Alignment Frameworks in Competency-Based Medical Education

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Background: Competency-Based Medical Education (CBME) emphasizes outcome-oriented training through clearly defined competencies, learner-centered educational strategies, and appropriate assessment methods. Effective implementation of CBME requires alignment between intended competencies, teaching–learning activities, and assessment tools. However, evidence regarding such alignment at the institutional level remains limited.

Methods: A cross-sectional descriptive study was conducted among undergraduate medical students and faculty members at a medical college in central India. Data were collected using a structured, pre-validated questionnaire assessing awareness of competencies, teaching–learning methods, and assessment practices. Curriculum documents, lesson plans, and assessment blueprints were reviewed using a checklist to examine competency mapping. Descriptive statistics were used for quantitative data, and thematic analysis was applied to open-ended responses

Results: Most faculty and students demonstrated adequate awareness of defined competencies. Active learning methods such as case-based discussions and skills-based training were commonly used. However, assessment practices were predominantly traditional, with limited utilization of workplace-based assessment tools and entrust able Professional Activities. Partial misalignment was observed between certain competencies and their corresponding assessment methods.

Conclusion: While foundational elements of CBME are in place, gaps persist in aligning competencies with assessment strategies. Strengthening faculty development and adopting programmatic assessment approaches may enhance alignment and effective CBME implementation.

Key words: Competency-Based Medical Education; Learning Frameworks; Assessment Alignment; Undergraduate Medical Education

Journal of Clinical and Biomedical Sciences

Autonomy versus Collaboration: A Crossover Study Comparing Jigsaw and Self-Directed Learning in Undergraduate Medical Physiology

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Background: Competency-based medical education requires a shift from passive lectures to active learning. Self-Directed Learning (SDL) and the Jigsaw Method (JM) are prominent strategies in this domain. SDL fosters autonomy and reflection, whereas the JM emphasises collaboration and peer teaching. Evidence comparing these strategies in undergraduate physiology is limited. This study evaluates the comparative effectiveness of SDL and JM for knowledge acquisition and student perceptions.

Methods: We conducted a quasi-experimental crossover study at an Indian medical college, involving 88 first-year MBBS students divided into two batches (A and B). 'Ascending Tracts' and 'Sleep Physiology' were the topics for Phase 1 and Phase 2, respectively. In Phase 1, Batch A underwent SDL while Batch B participated in JM; in Phase 2, the batches crossed over. All sessions were standardised and facilitated by the same faculty. We assessed knowledge gain using 10 pre-test and 10 post-test questions per session. Engagement, autonomy, and retention were measured using a validated 5-point Likert scale. Data analysis utilised ANOVA for academic scores and the Wilcoxon signed-rank test for perception data.

Results: SDL scores increased from 8.9 ± 2.1 to 13.6 ± 2.4 ($p < 0.001$). JM scores improved from 9.1 ± 2.3 to 14.0 ± 2.2 ($p < 0.001$). Both strategies significantly improved post-test scores, but the difference between SDL and JM was not statistically significant ($p = 0.18$). Learner perception scores favoured JM, with higher median scores for engagement (4.7 vs 4.0), overall learning experience (4.5 vs 3.5), and perceived retention (4.3 vs 4.0) (all $p < 0.05$). Perceived autonomy scores were comparable. 69% of students preferred JM for future sessions.

Conclusion: SDL and the JM are equally effective in improving short-term knowledge of medical physiology. JM offers additional advantages in learner engagement and collaborative learning. A blended approach may optimise the teaching of physiology.

Keywords: Competency-Based Medical Education; Active Learning; Self-Directed Learning; Jigsaw Method; Medical Physiology; Undergraduate Medical Education

Journal of Clinical and Biomedical Sciences

Effectiveness of an Eisenhower Matrix–Based Reflective Learning Model (ERLM) in Enhancing Self-Regulated Learning Among phase 2 MBBS Students: An Educational Intervention

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Background: Medical students experience significant academic overload while adapting to competency-based medical education. Although reflective learning is emphasized, students often lack structured tools for prioritization and meaningful reflection. Existing reflective practices are frequently unstructured and descriptive, limiting their impact on learning behavior and self-regulation. This study introduces an Eisenhower Matrix–Based Reflective Learning Model (ERLM) designed to integrate task prioritization with structured reflection.

Methods: This quasi-experimental pre–post educational study was conducted among second-year MBBS students. ERLM was developed as a digital intervention using an online platform where students categorized academic and clinical tasks using the Eisenhower Matrix and completed structured reflections based on the Gibbs–Schön reflective cycle. Weekly templates were submitted through Google Classroom. A preliminary needs-assessment questionnaire received 101 responses, supporting the relevance of the intervention. Participants underwent a four-week ERLM intervention. Outcome measures included the Self-Regulated Learning Scale (SRLS), Time Management Behaviour Scale (TMBS), Perceived Stress Scale (PSS-10), and academic MCQs.

Results: As the study is ongoing, results are presented as expected outcomes. ERLM is anticipated to improve self-regulated learning and time-management behaviours, enhance reflective depth, and reduce perceived academic stress. Improved academic engagement and positive student acceptability of the digital ERLM platform are also expected.

Conclusion: ERLM represents a novel, student-friendly educational framework integrating prioritization with structured reflection. It has the potential to enhance self-directed learning behaviours and reflective practice in undergraduate medical education. Further analysis will determine its effectiveness and scalability across institutions.

Key Words: Reflective learning; Eisenhower Matrix; Self-regulated learning; Medical education; Time management

Journal of Clinical and Biomedical Sciences

From Theory to Competency: A Comparative Assessment of Pharmacovigilance Awareness Among MBBS Students Under MCI and CBME Curricula

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Introduction: Pharmacovigilance is integral to ensuring medication safety, and is emphasized in India's Competency-Based Medical Education (CBME) curriculum for undergraduate medical students to enhance adverse drug reaction (ADR) awareness and reporting via the Pharmacovigilance Programme of India (PvPI). This study evaluated if the awareness generated among medical students was higher in the CBME curriculum, versus the erstwhile MCI curriculum.

Objectives: To assess and compare the knowledge and attitudes regarding pharmacovigilance between undergraduate medical students following Competency-Based Medical Education (CBME) curriculum versus Medical Council of India (MCI) curriculum.

Methods: A prospective cross-sectional study was conducted among 145 MBBS students at a medical college hospital, in March 2023 . Participants were of two groups: CBME batch (2019 & 2020 admission; n=67) and MCI batch (2017 & 2018 admission; n=78). Data was collected using a pre-validated 18-item questionnaire, consisting of 13 knowledge-based and 5 attitude-based questions, following informed consent. Descriptive statistics and unpaired t test were employed in statistical analysis.

Results: Knowledge – CBME group achieved significantly higher knowledge scores (mean = 8.56 ; SD= 2.40) compared to the MCI group (mean =7.17 ; SD= 2.00); and applying unpaired t test, p value was 0.00021, denoting a very highly significant difference between the groups. Attitudes – Attitude scores were higher in the CBME group (mean=4.12; SD=1.26) than the MCI group (mean=3.27 ; SD=1.85); and significant difference between the groups was obtained from unpaired t test, with p value, 0.0019.

Implications: CBME curriculum appears more effective than the erstwhile MCI curriculum in enhancing pharmacovigilance awareness and fostering positive attitudes towards ADR reporting. These gains, despite potential retention biases in senior students, are relevant , considering the importance of pharmacovigilance and active participation in the Pharmacovigilance Programme of India (PvPI) which are instrumental for safe and rational prescribing by these students when they start practicing medicine as future doctors.

Journal of Clinical and Biomedical Sciences

Impact of Academic Ambience among Medical Students using the DREEM Questionnaire in the Department of Pharmacology, SABVMCRI

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Background: The educational environment plays a crucial role in shaping medical students' learning experiences, motivation, and academic performance. Systematic evaluation of this environment is essential for identifying strengths and areas requiring improvement. The Dundee Ready Education Environment Measure (DREEM) is a validated tool widely used to assess students' perceptions of the educational climate in medical institutions.

Objectives: To assess the educational environment among second-year MBBS students of the 2024 batch in the Department of Pharmacology at Shri Atal Bihari Vajpayee Medical College and Research Institute using the DREEM questionnaire, and to identify specific strengths and problem areas.

Methods: A cross-sectional, questionnaire-based observational study was conducted among MBBS students aged ≥18 years. All eligible students were invited to participate through census-based voluntary sampling. The validated 50-item DREEM questionnaire was administered electronically after obtaining informed consent. Responses were scored according to standard DREEM guidelines. Descriptive statistics were used to summarize total and domain-wise scores.

Results: A total of 144 students completed the questionnaire. The mean total DREEM score was 142.2 ± 15.7 out of 200 with a score range of 101 – 179, indicating a learning environment that is more positive than negative. High scores were observed in domains related to students' perceptions of teachers and academic self-perception, reflecting knowledgeable faculty and a supportive learning approach. Areas with comparatively lower scores included stress management and certain aspects of the learning atmosphere, suggesting scope for targeted improvements.

Conclusion: The overall educational environment perceived by second-year MBBS students in the Department of Pharmacology was favourable. However, specific domains require focused interventions to further enhance student well-being and learning effectiveness. Periodic assessment using DREEM can guide continuous quality improvement in medical education.

Journal of Clinical and Biomedical Sciences

Faculty Practices and Perspectives towards Formative Assessment in Competency-Based Medical Education: A Mixed-Methods Study from Delhi, India

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Background: Formative Assessment (FA) is a cornerstone of Competency-Based Medical Education, driving deeper learning, reflective practice, and progressive competency development. However, translating FA into effective practice requires aligned frameworks, faculty readiness, learner engagement, and strong institutional support. This study aims to assess prevailing practice patterns of Formative Assessment among faculty in government medical colleges affiliated with the University of Delhi and to explore faculty-perceived implementation challenges while identifying feasible strategies to strengthen effective FA implementation within the CBME framework.

Methods: A convergent mixed-methods study was conducted among 223 faculty from government medical colleges affiliated with the University of Delhi. Quantitative data were collected using a structured, pre-validated questionnaire assessing FA practices, frequency of implementation, feedback use, and perceived barriers, and were analyzed using descriptive statistics. Qualitative data were obtained through Key Informant Interviews with purposively selected faculty, transcribed verbatim, and thematically analyzed independently by two reviewers to ensure rigor and credibility.

Results: A total of 223 faculty participated (mean age 38.6 ± 7.9 years; mean teaching experience 7.8 ± 6.6 years). Regular implementation of FA was reported by 53.2% of faculty, whereas only 41.8% consistently provided feedback. Although 55.2% had undergone faculty development related to FA, considerable variability persisted in conceptual understanding and authentic application of FA tools. Qualitative analysis identified four dominant domains: curriculum-related constraints, resource limitations, attitudinal and learner-engagement challenges, and training gaps, with time constraints emerging as the most frequently cited barrier. Faculty recommended institutional SOPs, scheduled FA integration, innovative assessment tools, involvement of senior residents, and strengthened faculty development initiatives to enhance implementation.

Conclusion: This study highlights the need for stronger institutional frameworks, scheduled integration of FA into routine teaching, and targeted faculty development to ensure meaningful implementation within CBME. Strengthening feedback culture and leveraging innovative assessment approaches can enhance learner engagement, improve competency attainment and advance the quality of undergraduate medical education.

Keywords: Formative Assessment; Feedback; Faculty; Competency-Based Medical Education; Mixed-Methods Study

Journal of Clinical and Biomedical Sciences

Evaluation of Post-Assessment Remedial Training for Competency-Based Biochemistry Assessment in for Medical Undergraduates in Haveri district of Karnataka in India: A Mixed-Methods Study

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Background: Competency-Based Medical Education (CBME) under NMC Annexure 9 emphasizes reasoning questions and case-based MCQs in Biochemistry assessments, yet first-year MBBS students often struggle with these higher-order formats. Post-assessment remedial training addresses this gap. For addressing learning gaps, post-assessment remedial training specifically targeting Biochemistry's reasoning (Q3: 5×3 marks) and case-based MCQs is needed. No prior studies from Haveri Institute of Medical Sciences or similar resource-limited settings have psychometrically validated structured questionnaires to evaluate such remedial interventions' effectiveness, alignment with NMC/RGUHS patterns, perceived learning gains, teaching processes, and satisfaction essential for institutional adoption and scalability across Indian medical colleges. This study aimed to assess the effectiveness of post assessment remedial training using a structured student feedback questionnaire assessing remedial training on reasoning questions and case scenario based MCQs in Biochemistry for first-year MBBS students.

Methods: Cross-sectional mixed-methods study among 106/150 (71%) first-year MBBS students (2024-25 batch) at Haveri Institute of Medical Sciences following remedial sessions on reasoning (Q3: 5×3 marks) and case-based MCQs. A 13-item, 4-domain Likert questionnaire (Assessment Alignment, Learning Gain, Teaching Process, and Satisfaction) was administered anonymously. Data analyzed in SPSS: Cronbach's α and descriptive statistics. Thematic analysis of open-ended responses (n=92) was performed.

Results: Respondents were 52.8% male (n=56), 47.2% female (n=50); 69.8% aged 20-22 years. Excellent reliability (Cronbach's α=0.962). All domains scored ≥4.05/5.0 (SD 0.57-0.64), with 80-82% Agree/Strongly Agree rates. Highest item: Q13 "Recommend to juniors" [36(34.0%) SA, 52(49.1%) A]. Qualitative thematic analysis identified key strengths including PCT tests (32% of responses) and group activities (28%), with primary suggestions for improvement encompassing more MCQs (35%) and earlier session scheduling (24%).

Conclusion: The validated questionnaire confirms remedial training's high perceived value for NMC/RGUHS-aligned Biochemistry assessments. Strong recommendation rates (83%) support institutional adoption. Mixed-methods findings inform scalable interventions for CBME implementation across Indian medical colleges.

Key words: Remedial Teaching, Case-Based Learning, Clinical Reasoning.

Development, Validation, and Evaluation of the effectiveness of Immersive Learning Based Toolkit– A Mixed Method study

Journal of Clinical and Biomedical Sciences

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Background: Conventional lecture-based teaching in dentistry often limits student engagement and long-term retention, particularly for psycho-social topics such as child behavior management, which require the development of soft skills. Immersive learning offers experiential environments that can enhance understanding by translating abstract concepts into meaningful clinical contexts. This study evaluated the effectiveness of an immersive-learning-based module for teaching the influence of parenting styles on child behavior in dental practice.

Methods: A mixed-methods study design was employed. The quantitative component followed a quasi-experimental approach, while the qualitative component involved focus group discussion. After obtaining ethical approval, a multidisciplinary stakeholder team was constituted. Needs assessment was done to identify the aspect of pediatric dentistry curriculum that can be delivered through the immersive learning based toolkit. Prior to the development of the immersive learning content, story board was developed. CVI values based on expert's response to questions indicating face validity was determined. The criteria having CVI values less than 0.5 were revised. Based on the validity of the storyboard, the immersive learning content was developed. Two immersive modules from the SKIL (Self-directed Knowledge Acquisition through Immersive Learning) toolkit, representing different parenting styles in pediatric dental setup were developed and implemented among 30 third-year BDS students. Knowledge acquisition was assessed using post-intervention test. Qualitative data were analyzed thematically by conducting Focused Group discussion with 8 students.

Results: Post-intervention assessments showed knowledge acquisition among participants. 80% of the students scored above 80% indicating the effective knowledge acquisition through the module. Thematic analysis identified enhanced understanding through immersion, effective integration of theory with clinical practice, emotional and cognitive engagement, and peer learning as major contributors to learning effectiveness. Students reported improved comprehension of complex psycho-social and communication-related concepts relevant to pediatric dental practice.

Conclusion: The findings support the integration of immersive learning tools into undergraduate dental curricula to foster experiential learning and soft skill development

Key words: Immersive Learning, Soft skills, Technology Integration

Journal of Clinical and Biomedical Sciences

Embedding Competency Based Education in Applied Nutrition Practical Examinations: An OSCE Framework

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Background: Competency-Based Education (CBE) emphasizes the assessment of learners ability to apply knowledge, clinical reasoning, and decision-making in authentic contexts. In applied nutrition education, traditional practical examinations often focus on factual recall and procedural tasks, limiting assessment of higher-order competencies. Objective Structured Clinical Examination (OSCE) offers a structured and standardized approach to competency-based assessment across multiple domains of nutrition practice.

Objective: To evaluate student performance across predefined applied nutrition competencies using an OSCE-based assessment framework and to examine competency-wise performance patterns across postgraduate batches.

Methods: A competency-based OSCE was implemented for postgraduate applied nutrition practical examinations involving 100 students across two academic batches. The OSCE comprised 20 structured stations, each of 4–5 minutes duration, designed around simulated clinical and public health nutrition scenarios. Stations assessed core applied nutrition competencies including nutrition screening and risk stratification, anthropometric interpretation, biochemical assessment, dietary assessment, maternal and child nutrition, neonatal care, and application of dietary standards. Performance was evaluated using standardized checklist-based scoring aligned with predefined competencies. The OSCE was mapped to the "Shows How" level of Miller's Pyramid and assessed higher-order cognitive domains of application, analysis, and evaluation as per Bloom's taxonomy. Scores were analysed descriptively.

Results: Mean OSCE scores ranged from 68% to 82% across stations. Higher performance was observed in stations assessing dietary standards application and anthropometric interpretation (78–85%). Lower scores were noted in biochemical data interpretation, nutrition risk stratification, and clinical decision-making stations (60–65%). Similar performance patterns were observed across both batches, supporting consistency of the framework.

Conclusion: The OSCE-based framework provided a feasible and effective approach for embedding competency-based assessment in applied nutrition practical examinations. OSCE facilitated authentic evaluation of higher-order cognitive and clinical reasoning skills and offers a replicable model for nutrition and allied health

Key words: Competency-Based Education, Objective Structured Clinical Examination, Nutrition Assessment

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Effect of Gamified Learning on Knowledge and its Acceptance among Undergraduate Medical Students

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Background: The integration of information and communication technology into the educational process enables learners to access a wide range of learning resources. Teachers face challenges in the classroom to create motivation and active participation in learning. Gamified learning can help students become more focused and lead to a deeper level of understanding. Although gamification and gamified learning are relatively new approaches in e-learning that have increased with the development of new technologies, very few studies have highlighted the effectiveness of this approach in India. Hence, this study is chosen.

Aim and objectives: This study aims to assess the effect of gamifying Physiology classes on the knowledge, satisfaction, and feedback on using gamified apps among undergraduate medical students.

Methodology: This Quasi-experimental study was done among first-year medical students aged ≥ 18 years. 250 students were divided into 4 groups with 62/63 students in each group. Two groups were randomly selected as the study group. A validated pretest questionnaire was used to assess their knowledge on the chapters - General Physiology and Blood. Gamification tools like Socrative, crossword puzzles, Slido, and Google Forms were used while teaching. Post-test marks and feedback about the session and response to the gamification acceptance questionnaire were collected. The other two groups act as control, where pretest marks, post-test marks, and feedback were collected following a routine class without using gamification apps.

Results: Continuous variables were expressed as mean ± SD. Paired and unpaired t-tests were used for comparison within and between groups, respectively. There is a significant increase in knowledge in both groups. The study group's knowledge significantly increased($P < 0.001$) over the control group. The level of satisfaction was also considerably high ($P = 0.02$) in the study group. Gamification acceptance score was 90.24 ± 10.72, and 60% had prior exposure to gamification. Thematic analysis showed that students were interested in gamification and needed more sessions. Slido was the most preferred tool.

Conclusion: Gamifying medical education enhances students' understanding of the subject. It increases their level of satisfaction and acceptance. These types of gamifying tools can be used in lecture classes to make them more interactive and engaging.

Key words: Acceptance, Gamification, Knowledge, Quasi experimental

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Embedding Empathy in Dental Training: Outcomes of a Geriatric-Focused Educational Intervention

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Background: Empathy and a positive attitude play a crucial role in effective dental care, especially while treating geriatric patients. Empathic behaviour improves patient trust, reduces anxiety, and enhances treatment outcomes. However, studies indicate a decline in empathy as dental students advance in their training, and the Indian BDS curriculum lacks structured empathy training.

Methods: Following ethical approval, 73 IV BDS students were randomly allocated into a control group (n=36) and an intervention group (n=37). Baseline attitude levels were assessed using Kogan's Attitudes Towards Old People (KAOP) scale. The intervention group underwent a structured training module comprising lectures, group discussions, and student–patient interactions focusing on age-related changes and empathy, while the control group received no intervention. Attitude scores were reassessed immediately and two months after the intervention. Data were statistically analysed.

Results: The intervention group showed a statistically significant improvement in mean attitude scores compared to the control group both immediately and at two-month follow-up ($p < 0.001$).

Conclusion: The empathy and attitude-building training module significantly improved dental students' attitudes towards geriatric patients. Empathy is a teachable skill and can be effectively incorporated into the undergraduate dental curriculum to promote patient-centred geriatric care.

Educational Impact: The training module enhanced students' understanding of empathy, refined their attitude towards geriatric patients, and encouraged patient-centred communication in dental practice.

Keywords: Empathy, Training, BDS

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A Survey on the Utilization of Digital Tools in Teaching, Learning, and Assessment among Physiotherapy Students and Educators

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Background: Physiotherapy education requires students to acquire extensive theoretical knowledge and clinical skills. With the growth of technology and the rapid shift during the COVID-19 pandemic, digital tools such as learning management systems, video conferencing, simulations, and assessment platforms have become integral. However, evidence on their adoption, effectiveness, and challenges remains limited.

Methods: A cross-sectional online survey was conducted (April–June 2025) among physiotherapy students and educators across India. A total of 344 participants (124 educators, 220 students) completed a validated questionnaire covering demographics, tool usage patterns, facilitators and barriers, and perceptions of digital integration. Descriptive statistics, chi-square tests, and correlation analyses were performed; open-ended responses were thematically analyzed.

Results: Digital tool use was widespread. The most frequently reported categories were learning management systems (36.3%), video conferencing platforms (12.2%), online assessment platforms (11.6%), and virtual simulations (8.7%). Mean frequency of use was 2.21 (SD = 1.25), and perceived effectiveness was 3.27 (SD = 0.99). No significant correlation was found between frequency and effectiveness (Spearman's r = –0.15, p = 0.128). Qualitative findings highlighted institutional support, faculty training, and access to platforms as facilitators, while poor infrastructure, limited skills, and resistance to change were barriers.

Conclusion: Digital tools are widely adopted in physiotherapy education, but effectiveness depends more on integration and support than frequency of use. Strengthening infrastructure and digital literacy is essential to enhance their impact.

Keywords: Physiotherapy education; Digital tools; Learning management systems; Video conferencing; Online assessment; Barriers and facilitators; India

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Using Standardized Patients to Support Early Clinical Transition in Dental CBME: A Qualitative Study of Student Experiences

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Background: The transition from preclinical training to clinical postings in the third year of undergraduate dental education poses challenges for students, particularly in history taking and patient communication. Competency-Based Medical Education (CBME) advocates early, structured, and safe learning opportunities to develop these foundational competencies. Standardized patient (SP) encounters provide a protected environment where learners can practice clinical interactions before engaging with real patients.

Aim: To explore third-year dental students' experiences of a standardized patient–based learning framework introduced at entry to clinical training, using clinical scenarios to support competency development in history-taking and communication.

Methods: An exploratory qualitative study was conducted among third-year undergraduate dental students during their initial clinical postings. Students participated in sequential standardized patient encounters: an irreversible pulpitis case involving a carious mandibular molar, and an Ellis Class IV fracture of a maxillary central incisor. Both scenarios were competency-mapped to CBME domains and aligned with Miller's Pyramid at the "Shows How" level. Data were collected through focus group discussions and written reflective narratives. Transcribed data were analysed using thematic analysis.

Results: Students described the standardized patient encounters as authentic, low-threat learning experiences that facilitated structured history taking and improved confidence in patient communication. Exposure to different clinical contexts enabled learners to recognize progression in their questioning strategies, adaptability in communication, and integration of clinical information. The reflective process also generated constructive feedback on areas for improvement in the design and implementation of the SP framework.

Conclusion: The use of multiple standardized patient encounters at the entry to clinical training provides an effective CBME-aligned framework for developing foundational communication and history-taking competencies in dental students. A qualitative approach is essential to capture learner experiences and inform iterative refinement of standardized patient models for early clinical education.

Keywords: Competency-Based Education, Standardized Patients, Early Clinical Exposure, Communication Skills, Qualitative Study

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From Stage to Simulation: Using Stanislavski's Acting Techniques for Training Healthcare Staff as Simulated Patients and their Standardization

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Background: Simulated Patients (SPs) are essential for assessment in health professions education, but their effectiveness depends on realism, authenticity, and standardization. Many institutions, particularly in resource-limited settings, face challenges in recruiting professional actors. This study aimed to evaluate the effectiveness of a training program based on Stanislavski's Acting techniques to prepare hospital staff as simulated patients and standardization.

Methods: A mixed-methods pre–post study was conducted at a tertiary care institution to train hospital staff as SPs using Stanislavski-based acting techniques, including tempo–rhythm, relaxation and circle of attention, 'Magic If,' inner life development, voice modulation, improvisation, and physical action-based characterization. Twenty-two participants completed baseline assessment, and twelve completed the full training and post-assessment. Outcomes included knowledge score (range: 0–100%), self-confidence rating (range: 20–100), and performance quality measured using SIMU-ACT (range: 0–100%). Standardization was evaluated through repeated portrayal performance. Non-parametric analyses were applied.

Results: Participants had no prior acting or SP training experience. Median knowledge scores improved significantly from 62.5% (IQR 62.5–75) to 87.5% (IQR 75–100; p = 0.0037). Self-confidence increased from 55.5 (IQR 48–60) to 65 (IQR 56–76, p = 0.589). SIMU-ACT scores improved markedly from 40.3% (IQR 22.2–51.9; 100% failure rate) to 80.5% (IQR 71.4–88; 0% failure rate; p = 0.0022). Repeat performances demonstrated strong standardization, with median repeat SIMU-ACT score of 86.7% (IQR 80.6–90.8) and a median difference of 4.5% (IQR 1.4–7). Participants reported that Stanislavski techniques enhanced realism, reduced anxiety, and supported consistent portrayal.

Conclusion: Stanislavski-based training effectively prepared non-clinical hospital staff to function as realistic and standardized SPs, demonstrating significant improvements in knowledge, performance quality, and consistency. This approach offers a feasible, cost-effective strategy for building institutional SP capacity and strengthening simulation-based education, particularly in resource-limited contexts.

Journal of Clinical and Biomedical Sciences

Revisiting Small-Group Teaching: Do Jigsaws Fit Better Than Seminars For Active Minds In Small Groups?

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Background: In recent decades, medical education has undergone significant transformation, with a progressive shift towards learner-centered pedagogical approaches. With advancements in educational technology, several innovative cooperative learning methods have been experimented to enhance learning effectiveness in small group teaching (SGT) environments. Despite increasing evidence supporting cooperative learning in medical education, studies related to direct comparisons between jigsaw and peer assisted group seminars remain limited

Methods: A total of 150 final year MBBS students were included in the study. Few exam relevant core competencies in obstetrics and gynecology were selected. Students were divided into two groups (Group A and B) based on the marks obtained in internal assessment ensuring equal distribution of potential and advanced learners in both the groups. Students in Group A were further divided into batch of five for peer assisted group seminars wherein students discuss the assigned topic within allocated batch and present followed by faculty-facilitated discussion. Jigsaw cooperative learning method was employed for Group B. Learning outcomes were assessed using pre and post-intervention assessment. Following this, a pre-validated questionnaire was administered to study the students' perception about usefulness and their willingness for extension of such cooperative learning strategy to other topics

Results: Comparison of assessment scores revealed better performance among students who participated in jigsaw session (16.7 + 2.81) compared to those in group seminar (15.67 + 2.67). Perceptions obtained on a Likert scale showed statistically significant difference in median scores and favored extension of Jigsaw for small group teaching sessions

Conclusion: Since positive outcomes are reported towards this collaborative approach a blend of lectures along with such cooperative learning sessions can be considered for optimal accomplishment of competencies by young graduates

Key words: Final year MBBS, Peer assisted seminar, Jigsaw

Journal of Clinical and Biomedical Sciences

A Comparative Study on the Effectiveness of Workshop-Based versus Traditional Practical Modules in Teaching Maitland Mobilization to Physiotherapy Students

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Background: Maitland mobilization is one of the most widely used techniques in musculoskeletal physiotherapy. Recent pedagogical advances draw attention to the approaches that are of a more structured nature and focus upon the learner such as workshop-based modules. There's still a noticeable lack of research that directly compares different teaching methods for Maitland mobilization. Therefore the aim of this study was to compare the effectiveness of traditional hands-on teaching versus a structured workshop-based approach in teaching Maitland mobilization to physiotherapy students.

Method: This study included 60 third-year Bachelor of Physiotherapy (BPTh) students who voluntarily participated after providing informed consent. Ethical approval was obtained from the Institutional Review Board. All participants attended a one-hour theoretical lecture on Maitland mobilization before being randomly assigned into four equal groups (A–D) using a crossover design. Groups A and D received workshop-based training for upper extremity techniques and traditional practical sessions for lower extremity techniques, while Groups B and C received the reverse. Performance was evaluated one week post-intervention using an Objective Structured Practical Examination (OSPE) and a multiple-choice questionnaire (MCQ).

Results: Both methods were effective for knowledge acquisition, with no major differences in cognitive test scores. However, workshop-based modules significantly outperformed traditional practical modules in OSPE scores, student satisfaction, and perceived learning outcomes. Students rated workshops higher for clarity (mean 4.62 vs. 2.77, $p < 0.001$), engagement (mean 4.73 vs. 2.71, $p < 0.001$), confidence in practicing skills (mean 4.19 vs. 2.74, $p < 0.001$), and overall learning effectiveness.

Conclusion: Workshop-based modules provide superior outcomes compared to traditional practical teaching for Maitland mobilization, particularly in psychomotor skill acquisition, learner engagement, and confidence.

Key words: Maitland Mobilization, Workshop-based module, Objective Structured Clinical Examination, Physiotherapy students, and Pedagogical Approach.

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Feed-Forward Assessment and Peer Marking: A Formative Strategy to Improve Academic Performance in Allied Health Education

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Background: In the Indian context, particularly in allied health education, assessment practices are predominantly summative. Many students enter professional courses with limited exposure to academic writing and feedback practices, which further contributes to poor outcomes. Formative strategies such as feed-forward assessment and peer marking have the potential to clarify expectations, enhance feedback literacy, and promote self-regulated learning.

Objectives: To evaluate the effectiveness of feed-forward assessment combined with peer marking in improving academic performance and to explore student perceptions of these formative strategies among first-year physiotherapy (BPT) students.

Methods: This quasi-experimental interventional study was conducted among 40 BPT students. Baseline academic performance was assessed using marks obtained in the first and second internal assessments of Physiology. The intervention consisted of five structured sessions of assignment writing, peer marking, and feedback discussions conducted after completion of didactic teaching for selected systems. Students worked in small groups to frame answers, evaluate peer assignments using standard references, and receive feedback from peers and faculty. Post-intervention academic performance was assessed using model examination scores. Student perceptions regarding the intervention were collected using a semi-structured questionnaire comprising Likert-scale and open-ended questions.

Results: There was an improvement in post intervention exam scores (37±19) compared to pre-intervention internal assessment scores (34±19) but was not statistically significant. Good agreement was observed between peer-awarded and faculty-awarded marks, indicating improved understanding of assessment standards. Perception analysis revealed enhanced clarity of expectations, improved academic writing skills, increased confidence, and positive attitudes towards peer learning and feedback.

Conclusion: Feed-forward assessment combined with peer marking is an effective formative strategy to enhance academic performance, feedback literacy, and learner engagement among first-year BPT students. Qualitative feedback highlighted reduced assessment-related anxiety and improved engagement with learning. Incorporating such approaches early in professional training may better prepare students for summative assessments and lifelong learning.

Key words: Feedforward assessment, Peer marking, formative, assessment

Journal of Clinical and Biomedical Sciences

Frameworks Outcome-Based vs Competency-Based Education in Ayush: A Comparative Educational Analysis

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Background: The evolving expectations from health professionals and the growing emphasis on social accountability have prompted Ayush education to re-examine its curricular frameworks. Traditionally anchored in outcome-based education (OBE), Ayush curricula are increasingly engaging with competency-based education (CBE) to better prepare graduates for authentic clinical practice. This comparative educational analysis explores the conceptual and practical distinctions between OBE and CBE within the Ayush context.

Methods: A comparative framework mapping approach was employed, supported by narrative synthesis of contemporary health professions education literature. OBE and CBE models were analysed across philosophical orientation, curriculum design, teaching–learning strategies, and assessment practices, with reference to learner-centredness, workplace-based assessment, and responsiveness to community healthcare needs relevant to Ayush systems.

Results: OBE demonstrated strengths in curricular structure and clarity through predefined learning outcomes and summative assessment, yet showed limited alignment with real-world clinical performance. CBE emerged as a more integrative model, encompassing knowledge, clinical skills, communication, professionalism, and ethical practice. Concepts such as Entrustable Professional Activities, milestone-based progression, and programmatic assessment showed strong potential to bridge classical Ayush knowledge with contemporary healthcare expectations. Faculty preparedness and assessment standardization were identified as key implementation challenges.

Conclusion: While OBE provides a foundational curricular framework, CBE offers a more comprehensive, clinically meaningful, and practice-oriented approach for Ayush education. A phased, context-sensitive transition towards CBE may better support the development of competent, accountable, and practice-ready Ayush graduates.

Key words: Ayush education; competency-based education; outcome-based education; health professions education; assessment frameworks

Journal of Clinical and Biomedical Sciences

A Comparative Evaluation of Technology Assisted and Non technological Gamified Learning on Knowledge of Early Childhood Caries Prevention among Undergraduate Dental Students

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Background: Traditional lectures inadequately engage dental undergraduates. Gamification promotes active learning, but evidence comparing technology-assisted and non-technological gamification learning approaches in ECC education needs to be explored. This study compares the effectiveness of technology-assisted and non-technological gamified learning on ECC prevention knowledge among undergraduate dental students.

Methods: A quasi-experimental study will be conducted among 3rd-year undergraduate dental students randomly assigned to: (1) Technology-Assisted Gamification (digital quizzes, scenario-based polls, leaderboards) or (2) Non-Technological Gamification (card/board games, role-play, puzzles). Both groups will receive identical ECC prevention content. Knowledge gain will be measured using validated pre- and post-test MCQs. Student engagement and perceptions will be assessed via a Likert-scale questionnaire. Station scoring will be standardized and outcomes will be mapped to Kirkpatrick Levels 1 and 2. Data will be analysed using paired and independent t-tests ($p < 0.05$).

Results: Results indicated that that technology-assisted gamification was more effective in improving knowledge than non-technical gamification. TAG group reported significantly better perceived improvement in understanding of ECC preventive strategies compared with the NTG group.

Conclusion: Gamification enhanced learning however, digital gamification yielded superior outcomes in terms of student test score success compared to non-digital. To gain a more comprehensive understanding of the long-term effects of gamification, further studies are recommended.

Key words: Early Childhood Caries, Gamification, Dental Education, Technology-Assisted Learning, Competency-Based Education.

Journal of Clinical and Biomedical Sciences

Need Assessment for Developing a Viva Question Randomization Software

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Background: Viva voce examinations are an essential component of assessment in medical and health sciences education. However, conventional viva practices often suffer from inconsistency in question difficulty, examiner bias, and lack of standardization, raising concerns about fairness and reliability. Digital solutions that enable systematic randomization of questions may help overcome these limitations.

Methods: A cross-sectional, questionnaire-based need-assessment survey was conducted among medical teachers involved in conducting viva voce examinations. The survey explored current viva practices, perceived challenges, and expectations regarding a proposed Viva Question Randomization Software.

Results: A total of 242 faculty members participated in the survey, representing a range of teaching and examination experience. Current major challenges were "Difficulty in covering the syllabus uniformly" and "Unequal question difficulty". Most respondents (4.46±0.93 on a 5-point Likert scale) acknowledged that a software that generates randomized viva questions would be useful, and they would like to use such a software if made available (4.29±1.08 on a 5-point Likert scale). Key anticipated benefits included "equalized question sets for each student," "topic-wise question grouping," and "difficulty level-wise questions access."

Conclusion: The findings indicate a perceived need for a viva question randomization software in medical education. Faculty members recognize its potential to enhance the uniform distribution of questions from all chapters. These results provide empirical support for the development of a user-oriented, evidence-based digital tool to improve oral assessment practices in health professions education.

Keywords: viva voce; oral assessment; medical education; question randomization; educational software; need assessment

Journal of Clinical and Biomedical Sciences

Adoption of AI-Assisted Learning Tools Among First-Year MBBS Students: Opportunities and Concerns in a CBME Curriculum

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Background: Artificial intelligence (AI)–assisted learning tools are increasingly used by medical students; however, evidence regarding their adoption, perceived usefulness, and ethical concerns within a Competency-Based Medical Education (CBME) framework remains limited.

Methods: A descriptive cross-sectional survey was conducted among first-year MBBS students at a rural medical college in South India. An anonymous, validated online questionnaire assessed demographics, digital access, awareness and patterns of AI use, perceived usefulness, concerns, training needs, and open-ended feedback. Descriptive statistics were applied, and qualitative responses were analysed using thematic content analysis.

Results: Of 200 eligible students, 142 participated (response rate 71%); 28.9% were males and 71.1% tools was universal, and all respondents reported academic use.
AI tools were primarily used for summarizing notes, understanding difficult concepts, exam preparation, writing assignments, and generating practice questions. 73.9% agreed or strongly agreed that AI facilitated faster understanding of complex topics, 69.7% reported improved exam preparation, and 69.0% felt AI supported self-directed learning in CBME. Confidence in learning was enhanced in 59.1% of students. However, only 54.9% agreed that AI-generated information was generally accurate.
Ethical concerns were prominent: approximately two-thirds of students expressed concerns about misleading information, reduced critical thinking, plagiarism, and data privacy. 72.5% strongly supported need for faculty-developed guidelines, and 62.0% favoured formal introduction of AI into CBME curriculum. Open-ended responses emphasised AI as a time-efficient, supportive learning aid, while cautioning against overdependence and advocating structured faculty guidance.

Conclusion: AI-assisted learning tools are widely adopted and positively perceived among first-year medical students. Thoughtful integration into CBME, supported by faculty guidance, ethical frameworks, and targeted training, is essential to maximise educational benefits while mitigating risks.

Key words: AI-Assisted Learning, Educational Technology, Medical Students, Self-Directed Learning, Digital Health Education, Ethics

Journal of Clinical and Biomedical Sciences

Innovative Quiz-Based Formative Assessment in AETCOM: Ethics and Professionalism Competencies Among Third-Year MBBS Students

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Background: Competency-Based Medical Education (CBME) requires assessment of ethics, professionalism and communication alongside clinical knowledge and skills. The Attitude, Ethics, and Communication (AETCOM) curriculum aims to develop these competencies; however, feasible assessment strategies during routine teaching are often limited. Interactive quiz-based formative assessments can integrate assessment with learning, provide immediate feedback, and generate objective analytics that help educators understand learner performance and areas requiring reinforcement. This study aimed to assess the ethics and professionalism competencies of third-year MBBS students using an innovative quiz-based formative assessment in AETCOM, and to evaluate the acceptability and identify learning gaps using student feedback and item difficulty/time metrics derived from quiz analytics.

Methods: A cross-sectional descriptive educational evaluation was conducted during a scheduled AETCOM session for third-year MBBS students at a tertiary care teaching institution. A quiz-based formative assessment aligned with AETCOM ethics and professionalism competencies was administered using an online interactive platform (Wayground). Quiz analytics captured overall accuracy, score, correct/incorrect/unattempted responses, item-wise correctness, and time taken. Immediately after the session, students provided structured feedback using a five-point Likert scale on engagement, usefulness, relevance to clinical practice, and reinforcement of learning, along with brief suggestions. Data were analysed using descriptive statistics and the Qualitative Analysis Thematic approach.

Results: A total of 229 students participated. The mean overall quiz accuracy was approximately 81%, indicating satisfactory understanding of assessed AETCOM competencies. Item-wise analysis demonstrated variability in performance, with lower correctness observed in questions requiring higher-order ethical decision-making. Feedback indicated high acceptability of the quiz-based assessment, with mean Likert scores exceeding 4.3/5 across engagement, usefulness and relevance, and more than 95% of participants preferred similar assessments in future AETCOM sessions. Student suggestions commonly emphasised increased engagement and the value of immediate feedback into 4 themes by Qualitative analysis.

Conclusion: Innovative quiz-based formative assessment is a feasible and well-accepted approach to assess AETCOM ethics and professionalism competencies among undergraduate medical students. Quiz analytics can highlight learning gaps and support assessment-for-learning within the CBME framework.

Key words: AETCOM; Competency-Based Medical Education; Ethics Education; Professionalism; Formative Assessment; Medical Education

Enhancing Surface Marking Competence Using Horizontally Aligned Practical Teaching in Phase 1 MBBS students: A Crossover Study

Journal of Clinical and Biomedical Sciences

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Background: Surface marking is an essential clinical skill for accurate palpation and interpretation of medical images. However, undergraduate medical students often demonstrate poor competence in surface anatomy. Many innovative teaching strategies require additional instructional time, limiting their routine implementation in an already crowded curriculum. Horizontally aligned teaching that integrates disciplines within existing practical sessions may provide a feasible alternative.

Objectives: To evaluate the effectiveness of horizontally aligned Anatomy Physiology practical teaching in improving surface marking competence among Phase 1 MBBS students and to explore student perceptions.

Methodology: This crossover study was conducted during routine Anatomy and Physiology practical sessions. The intervention included surface anatomy of the head and neck and lower limb. Anatomy surface marking was integrated with relevant Physiology components palpation of peripheral arterial pulses for the lower limb, and palpation of the common carotid artery, superficial temporal artery, and assessment of jugular venous pulse for head and neck. Group A received aligned teaching for head and neck topics and conventional teaching for the lower limb, while Group B received aligned teaching for the lower limb and conventional teaching for head and neck topics. Baseline competence was assessed before the intervention using a structured checklist evaluating anatomy surface marking and related physiology practical skills. The same checklist was used for post-intervention and crossover assessments.

Results: One hundred and fifty students participated. Pre post data were available for 107 students, while crossover and paired analyses included up to 130 students. Baseline competence was low (median score 3.0; IQR 1.0–5.0). Post-intervention scores improved significantly (median 8.0; IQR 6.5–9.5; $p < 0.001$). Aligned teaching produced significantly higher scores than conventional methods during both crossover phases ($p < 0.001$).

Conclusion: Horizontally aligned Anatomy Physiology practical teaching significantly improves surface marking competence and supports integrated learning without increasing curricular burden.

Keywords: Surface Anatomy, Clinical Examination, Curriculum Integration, First-Year Medical Students, Anatomy Education.

Journal of Clinical and Biomedical Sciences

QR Code–Enabled Feedback for Skill Lab Mannequin Utilisation: Outcomes from a Large Undergraduate Cohort

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Objectives: Skills laboratories play a critical role in competency-based undergraduate medical education, with the National Medical Commission (NMC) mandating exposure to defined mannequins and procedures. Despite this, structured mechanisms to monitor utilisation, learner satisfaction, and quality improvement in skills labs are limited, particularly in institutions managing large student cohorts. This study describes the implementation and analysis of a QR code–based feedback system to monitor skills laboratory utilisation and learner perceptions.

Methods: A descriptive observational study was conducted in a central skills laboratory catering to approximately 250 third-year and 250 fourth-year MBBS students. A QR code–based feedback tool was introduced across all mannequins mapped to NMC requirements. Feedback was collected immediately after each session between February and August 2025. The tool assessed four domains—learning outcome, equipment satisfaction, process satisfaction, and perceived usefulness—using a 5-point Likert scale. Session counts, participant numbers, departmental utilisation, monthly trends, and low-rating events (≤2) were analysed.

Results: A total of 97 skills lab sessions were conducted, generating 2,553 learner responses. Mean ratings were high across all domains: learning outcome (4.40), equipment satisfaction (4.23), process satisfaction (4.39), and usefulness (4.45). Utilisation increased steadily from 1 session (20 participants) in February to 22 sessions (572 participants) in August. General Medicine accounted for the highest utilisation, followed by Paediatrics, General Surgery, and Obstetrics & Gynaecology. Eleven sessions (11%) recorded at least one rating ≤2, most commonly related to equipment or process issues. Equipment satisfaction showed progressive improvement over time, suggesting responsiveness to early feedback.

Implications for practice: QR code–based feedback provides a simple, scalable approach to monitor skills lab utilisation, learner satisfaction, and quality indicators in large undergraduate cohorts. Beyond documenting compliance with regulatory requirements, this system enabled identification of actionable deficiencies and supported continuous quality improvement in skills-based training.

Journal of Clinical and Biomedical Sciences

Development and Evaluation of Virtual Reality (VR) Module on Heart's Blood Supply as a Pedagogical Tool in Teaching & Learning Anatomy for First year medical students

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Background: With the development of digital and immersive technologies in anatomy education, virtual reality (VR) has emerged as a game-changing pedagogical tool. Despite encouraging findings, there are still very few specialized virtual reality modules designed for the complex heart's blood supply, which is fundamental in clinical cardiology and surgery. The objective of this study is to design, develop and evaluate a VR module on heart's blood supply for teaching & learning Anatomy for first year medical students.

Methods: The study was conducted in the Virtual Reality lab of a tertiary care hospital attached medical college. The study participants included 250 phase 1 undergraduate medical students. The development of the virtual reality (VR) module on the blood supply of the heart was undertaken in four sequential phases: data acquisition, image processing and 3D reconstruction, VR integration, and validation. Coronary angiographic datasets were sourced from the Department of Radiology with all identifying patient information removed. The reconstructed 3D models were imported into the Immersive Touch® platform, which allows immersive, haptic-enabled interactions. Traditional teaching-learning sessions were followed by VR lab teaching-learning sessions. A pre & post tests were conducted. The effectiveness of the VR module was evaluated using Kirkpatrick's level 1 and level 2.

Results: More than 90% of students obtained marks above 70% in the post-test. The difference between pre- and post-test scores was statistically significant, indicating a significant improvement in knowledge after the intervention. The feedback from first-year MBBS students following their VR lab visit was overwhelmingly positive.

Conclusions: The present study's results are highly consistent with broader literature, affirming the efficacy of VR in enhancing anatomical knowledge, especially for complex three-dimensional structures and spatial relationships. Virtual reality is a valuable and powerful supplementary tool for modern anatomy education and can be used for a large group of students.

Key words: Virtual reality, anatomy education, immersive

Journal of Clinical and Biomedical Sciences

Development of a validated interprofessional Elderly care teaching module to enhance the interprofessional competencies among health care professionals

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Background: Elderly care demands a holistic, patient-centered approach that integrates expertise from multiple health professions. However, conventional healthcare education often emphasizes discipline-specific knowledge with limited focus on collaborative practice. Essential soft skills such as teamwork, communication, cultural competence, and ethical decision-making are frequently underrepresented. Interprofessional education (IPE) provides a platform for students from diverse health professions to learn with, from, and about each other, thereby fostering teamwork and improving care outcomes. Recognizing the high prevalence of anxiety, falls, diabetes, and hypertension among older adults, this study aimed to design and validate an interprofessional teaching-learning module to enhance healthcare professionals' competencies in elderly care.

Methodology: A quasi-experimental study was conducted in the Department of Forensic Medicine and Toxicology at KLE Homoeopathic Medical College, involving 70 students from Medicine, Dentistry, Physiotherapy, Psychiatry, Homoeopathy, Nursing, and Nutrition. The module addressing anxiety, falls, diabetes, and hypertension in the elderly was developed with expert input, validated, and pilot-tested. Evaluation included a validated pre–post multiple-choice questionnaire, interprofessional case scenarios and ICCAS score assessing collaboration, communication, shared decision-making, and holistic care planning.

Results: The module demonstrated strong content validity (CVI = 0.92) and high internal consistency and reliability (Cronbach's alpha = 0.868). Post-intervention and ICCAS analysis revealed a significant improvement in scores ($p = 0.001$), indicating its effectiveness in enhancing students' interprofessional knowledge and competencies.

Conclusion: In conclusion, the validated interprofessional module on anxiety, falls, diabetes and hypertension in elderly, significantly improved collaboration, communication, and understanding among healthcare students. This approach offers a sustainable, replicable model to prepare future professionals for the complex, team-based challenges of elderly care.

Journal of Clinical and Biomedical Sciences

What drives Adoption of Three-Dimensional Anatomy Learning Application among Undergraduate Medical Students? -An exploration using domestication theory

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Background: Three-dimensional anatomy applications are a potentially valuable complementary resource for learning anatomy. However, we found that our I year medical undergraduate students, despite being digital natives and the similar app interface, varied greatly in using an institutionally purchased 3D anatomy learning app. Hence, we undertook an exploration of the usage trends of the app and elicited factors that determine adoption of a 3D app for learning Anatomy through the lens of the Domestication theory.

Methods: We undertook an exploratory mixed methods study in a single institution. Universal sampling was carried out among all 150 I year medical undergraduates. In the first phase, participants filled an online questionnaire containing details of app usage. Following this, participants with high, low and discontinued usage of the app participated in a semi-structured Focus Group Discussion (FGD) for more comprehensive information. Deductive thematic analysis was carried out independently by two researchers to categorise responses.

Results: Majority of participants (65.4%) reported that they used the app, while 29.4% had used it initially but later discontinued usage, and only 5.1% had never used it. Regarding frequency, most participants reported either low usage (43.4%) or average usage (41.2%), with only a small percentage indicating high usage (5.1%). The categories could be sorted into themes based on the four dimensions of the domestication theory and findings suggest that while initial exploration is happening, sustained and confident usage needs improvement.

Conclusion: Factors related to academic gain, ease of access, support and pedagogical inclusion of activities are essential to learner adoption of technology. The factors that participants shared under the appropriation, objectification, incorporation and conversion spotlight that objectivation and incorporation are chief areas to improve adoption of learning applications. However, the domestication theory falls short of addressing individual learner motivation and behaviour in determining adoption.

Key words: 3D Interactive app, Domestication theory, Anatomy, Medical Education

Journal of Clinical and Biomedical Sciences

What Makes Bioethics Education Effective for Decision Making Skills? Playact or Case Based Debate Discussion: The Perception of Medical Undergraduate Student

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Introduction: Bioethics education is a critical component of undergraduate medical training, aiming to prepare future physicians to navigate complex moral dilemmas in clinical practice. Traditional didactic lectures often fall short in fostering ethical reasoning and decision-making skills, prompting educators to explore interactive pedagogies such as case-based discussions, debates, and role-playing activities to enhance moral competence and active engagement. This study investigates whether interactive educational strategies specifically playact (role-play enactment) and case-based debate discussions are perceived by medical undergraduate students as more effective than conventional methods in improving ethical decision-making skills. It seeks to compare student perceptions of learning effectiveness, critical thinking development, and decision-making confidence across these two approaches.

Methods : A mixed-methods cross-sectional design was used to collect data from undergraduate medical students exposed to both teaching strategies within a AETCOM modules. Questionnaire surveys measured students' self-reported decision-making confidence and perceived learning gains. Qualitative feedback was obtained through focus group discussions exploring students' lived experiences of playact and case-based debate sessions. Institutional AETCOM curriculum frameworks and student perceptions were analyzed to assess educational impact.

Results: 210 students' responses were analyzed and the majority of students demonstrated good to very good levels of ethical decision-making competence, with overall scores indicating effective conceptual understanding of patient autonomy and ethical principles. Teaching modalities incorporating playact and case-based debate discussions received significantly higher perception scores compared to conventional didactic lectures, particularly in domains of engagement, clarity, and application to real-life clinical scenarios.

Conclusion: Learner-centered, participatory teaching strategies enhance ethical understanding and decision-making preparedness. Early exposure to such methods during Phase II training may better equip students to navigate ethical challenges during clinical postings and future medical practice. The higher scores observed in the playact plus debate group further suggest that combining experiential enactment with structured analytical discussion may offer additive educational benefits.

Keywords: Bioethics, playact, debate, AETCOM

Journal of Clinical and Biomedical Sciences

Developing an Integrated Curriculum for Alcohol Use Disorder: A Competency-Based Approach for Undergraduate Medical Students in India

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Background: Alcohol Use Disorder (AUD) is a major public health problem globally and in India, contributing substantially to morbidity, mortality, and social harm. Despite this burden, undergraduate medical education in India has limited structured, competency-based training in AUD, resulting in gaps in screening, early intervention, counselling, and stigma reduction. Strengthening undergraduate training is essential to prepare future physicians for frontline identification and management of AUD.

Objectives: To develop an integrated, competency-based curriculum module on Alcohol Use Disorder for final-year MBBS students in India, aligned with national CBME requirements and grounded in established medical education frameworks.

Methods: Kern's six-step approach to curriculum development was used, incorporating problem identification, literature review, targeted learner needs assessment, formulation of competencies and learning objectives, selection of multimodal educational strategies, and planning for implementation and evaluation. Content was derived through literature review, curriculum mapping, and interdisciplinary faculty consultation. Assessment strategies were blueprint-mapped to competencies using formative tools and structured summative assessments. Evaluation planning was guided by Kirkpatrick's four-level model.

Results: The outcome was a fully developed, competency-mapped curriculum module comprising clearly defined learning objectives across cognitive, psychomotor, and affective domains; multimodal teaching–learning methods; aligned assessment blueprints for MCQs and OSCEs; a feasible one-day implementation plan; and a structured evaluation framework. The module is designed for phased pilot implementation in final-year MBBS students with scope for iterative refinement.

Conclusion: This curriculum offers a systematic and scalable approach to strengthening AUD education within undergraduate medical training. By improving knowledge, clinical skills, and attitudes, it has the potential to enhance early detection, reduce stigma, and support task-sharing approaches in addressing alcohol-related harm in India.

Key words: Alcohol use disorder; Undergraduate medical education; Competency-based curriculum; Kern's six-step approach; Medical education.

Journal of Clinical and Biomedical Sciences

Enhancing Competency-Based Postgraduate Pathology Education Through an Innovative Faculty Development E-Course to develop Entrustable Professional Activities

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Introduction: Competency-Based Medical Education (CBME), mandated by India's National Medical Commission (NMC), requires postgraduate pathology programs to ensure trainees achieve well-defined competencies. Entrustable Professional Activities (EPAs) are tasks that help bridge this gap. They bundle multiple competencies into a few concrete, real-world, profession-specific observable tasks that faculty can directly assess and formally entrust to the postgraduates. However, faculty expertise in concept and creation of EPAs remain scarce in India.

Objective: This study aimed to address this gap by designing and delivering a pioneering e-course with dual goals: (1) to build faculty capacity in understanding, EPAs, and (2) to collaboratively formulate a set of validated EPAs aligned with NMC's CBME curriculum.

Methods: The e-course was structured using the ADDIE instructional design model (Analysis, Design, Development, Implementation, and Evaluation). Conducted entirely online, the format made it feasible for faculty from diverse medical colleges and regions to participate. Over five months and five modules, participants engaged in a flipped-classroom approach that combined asynchronous preparatory materials with live interactive sessions. Faculty and participants collaboratively identified critical EPAs through a virtual Nominal Group Technique, and performed peer validation using structured checklists.

Results: Nineteen faculty members enrolled, with 18 completing the program. The process resulted in a validated list of 27 rotation-specific core EPAs for postgraduate pathology. Sixteen complete EPA descriptions were drafted, four underwent structured peer validation during the course, and a post-course cohort of 11 participants continues to advance EPA validation—demonstrating ownership of the product and sustainability through building community of practice.

Conclusion: This first-of-its-kind e-course globally not only achieved its goal of building faculty expertise in developing and validating Entrustable Professional Activities. It also served as a proof of concept for our program theory. Grounded in the unique needs of the Indian context—where CBME is still emerging this innovation demonstrated how globally aligned educational models can be brought home through innovative local adaptations giving strength to the concept of 'glocalization'

Journal of Clinical and Biomedical Sciences

From Linear Slides to Integrated Thinking: Evaluating NotebookLM-Based Mind Mapping in Undergraduate Dental Education

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Background: Dental education requires effective strategies to integrate complex conceptual and clinical knowledge. While concept mapping has been widely used to promote meaningful learning, it may impose high cognitive load. AI-supported strategies such as NotebookLM-based mind-mapping may enhance learning efficiency and clinical reasoning.

Objective: To compare the effectiveness of a NotebookLM-assisted mind-map teaching strategy with traditional concept mapping on knowledge acquisition, retention, clinical reasoning, and cognitive load among undergraduate dental students.

Methods: A randomized controlled educational trial was conducted among Bachelor of Dental Surgery students at Jouf University. Participants were randomly allocated to a NotebookLM mind-map group (n = 42) or a traditional concept mapping group (n = 41). Both groups received identical learning objectives, instructional materials, and learning time. Outcomes included pre-test, immediate post-test, delayed retention test, case-based clinical reasoning scores, perceived cognitive load, and student satisfaction. Data were analyzed using ANCOVA with baseline scores as covariates.

Results: Baseline pre-test scores were comparable between groups (NotebookLM: 41.6 ± 8.9 vs. Concept Mapping: 42.3 ± 9.1; $p = 0.72$). The NotebookLM group demonstrated significantly higher immediate post-test scores (78.4 ± 7.6 vs. 71.2 ± 8.3; $p < 0.001$) and superior retention at 4 weeks (74.1 ± 7.9 vs. 66.5 ± 8.6; $p < 0.001$). Clinical reasoning scores were also significantly higher in the NotebookLM group (16.8 ± 2.1 vs. 14.9 ± 2.4 out of 20; $p = 0.002$). Students using NotebookLM reported lower perceived cognitive load (Paas scale: 4.1 ± 1.2 vs. 5.6 ± 1.4; $p < 0.001$) and higher overall satisfaction scores (4.5 ± 0.6 vs. 3.8 ± 0.7 on a 5-point Likert scale; $p < 0.001$).

Conclusion: The NotebookLM-based mind-map teaching strategy was significantly more effective than traditional concept mapping in improving knowledge acquisition, long-term retention, clinical reasoning, and learner experience. Structured integration of AI-assisted mind-mapping may represent a valuable advancement in dental education pedagogy.

Keywords: Dental education; Mind mapping; Concept mapping; Artificial intelligence; NotebookLM; Cognitive load; Clinical reasoning

Journal of Clinical and Biomedical Sciences

Problem-Based Learning in Physiotherapy: Development and Implementation of a Structured Training Module for Faculty

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Objectives: Problem-Based Learning (PBL) is increasingly recognized as an effective pedagogical strategy for promoting critical thinking, clinical reasoning and self-directed learning in health professions education. Physiotherapy faculty play a pivotal role in facilitating PBL environments, however, many lack structured training in PBL facilitation and implementation. This study aimed to (1) develop an evidence-informed PBL training module for physiotherapy faculty (2) implement the module through a structured training program and (3) evaluate its effectiveness in enhancing faculty knowledge, facilitation competence and readiness to implement PBL.

Methods: The study was conducted in two phases. In Phase I, a comprehensive PBL training module was developed through literature review, expert consultation and review of physiotherapy clinical training needs. Content validation was undertaken by a panel of 9 experts in physiotherapy education. In Phase II, a pre-experimental one-group pretest–posttest design was employed. Seven physiotherapy faculty members participated in a two-day training workshop that included interactive lectures, case-based discussions, facilitator role-play and assessment practice. Baseline and post-intervention knowledge were measured using a structured questionnaire. Faculty facilitation skills were assessed by students during practice sessions using Dolmans' Short Tutor Evaluation Questionnaire.

Results: The developed module demonstrated robust validity, with a Content Validity Index (CVI) of 0.91 across all domains. Mean post-test knowledge scores (14.25 ± 2.10) were significantly higher than pre-test scores (9.83 ± 3.95), with a mean difference of 4.42 ($p = 0.02$), indicating substantial improvement in knowledge. Student evaluation using Dolmans' questionnaire reflected high levels of faculty facilitation competence, with mean ratings above 3/5 across clarity of guidance, stimulation of critical thinking, engagement and constructive feedback domains.

Implications: Participants indicated positive experiences with the PBL module, noting that the well-designed content, effective facilitation and interactive practical sessions significantly enhanced its overall value.

Journal of Clinical and Biomedical Sciences

Self-Directed Learning Readiness and Its Association with Competency Attainment in Biochemistry among MBBS Students -A Cross sectional Analytical study

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Background: Competency-Based Medical Education (CBME) emphasizes learner autonomy and lifelong learning, with self-directed learning (SDL) as a key strategy. However, learners vary in their readiness for SDL, and evidence linking self-directed learning readiness (SDLR) to actual competency attainment, particularly in pre-clinical subjects like Biochemistry, is limited.

Objectives: To assess self-directed learning readiness among MBBS students and determine its association with competency attainment in Biochemistry.

Methods: An analytical cross-sectional study was conducted among 150 first-year MBBS students. SDLR was assessed using the validated Fisher Self-Directed Learning Readiness Scale. Competency attainment was measured using a composite score derived from a blueprinted knowledge assessment, an eight-station Objective Structured Practical Examination (OSPE), and case-based application assessment. Data were analysed using correlation and multiple linear regression.

Results: The mean SDLR score was 147.9 ± 14.2, indicating moderate to high readiness. The mean composite competency attainment score was 74.3 ± 9.6. SDLR showed a significant positive correlation with competency attainment ($r = 0.46$, $p < 0.001$). Among SDLR domains, self-management demonstrated the strongest association ($r = 0.49$, $p < 0.001$). Students in the high SDLR tertile achieved significantly higher competency scores than those in the low SDLR tertile (81.2 ± 8.4 vs 67.5 ± 8.2; $p < 0.001$). SDLR emerged as an independent predictor of competency attainment on regression analysis.

Conclusion: Higher self-directed learning readiness is associated with better competency attainment in Biochemistry. Early identification of students with low SDLR and provision of structured SDL support may enhance learning outcomes under CBME.

Keywords: Self-directed learning readiness; competency-based medical education; Biochemistry; OSPE; undergraduate medical education

Journal of Clinical and Biomedical Sciences

Self-Perceived Competence of Interns in Western Maharashtra: A Cross-Sectional Study

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Background: Medical education has evolved through years. From the traditional time-limited blocks of coursework with assessment by high stake examination , it has now a structured competency-based approach. These competencies are defined for each subject over the entire course of medical education and assessed from time to time. The training is now based on DOAP- Demonstrate, observe, assist and perform method of teaching. However, the question remains that is the Indian medical graduate (IMG) feels competent to face the challenges of medical practice? To understand the perception of students a study was planned with the aim of assessing competence of interns in completing various core competencies.

Methods: A cross- sectional study was designed for the interns of a medical college in Western Maharashtra. Data was collected using a structured, pre validated questionnaire which consisted of 100 competencies listed by National Medical council for medicine surgery and allied subjects, and were grouped with respect to areas of patient care .A scoring system was developed to indicate feels competent, can perform the task with assistance and not competent.

Result: Data was analysed for 147 completely filled forms. Total score of individuals ranged between 69 to 221, with average score of 133.3 ± 30.9. Analysis was further done to pinpoint areas where students were less confident. Areas where maximum students felt less than 50% competent were recording and medical examination, while more number of students who felt more than 75% competent were for surgical first aid.

Conclusion: As very few students felt competent enough to perform the task on their own, emphasis should be given on perform part of DOAP method of medical education, so that students are ready to provide basic medical services.

Key words: Competencies, Self – Perceived competence, Medical students.

Journal of Clinical and Biomedical Sciences

Plastinated models: Innovative teaching-learning adjunct in Anatomy

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Background: The medical students of the newer generation are more enthusiastic and explorers when it comes to acquiring knowledge, especially through the world wide web (www) & multi-media. To increase their motivation and enhance anatomy learning various methodologies have been introduced in recent years like problem-based learning, virtual reality surgical simulators, and computer-based learning methods. One such innovative technique is Plastination. Plastinates have become one of the revolutionary innovations in medical education and have become ideal tutoring tool in other fields like pathology, obstetrics, radiology and surgery.

Objectives: The primary objective of this study was to assess the perception and utility of plastinated model as a novel educational tool among medical undergraduate students.

Materials & Methods: Small group Quasi-experimental study was done using questionnaires with a 5-point likert scale. Perception regarding the utility of this silicon cast and Plastinate model as learning tools in Anatomy was assessed among 70 medical students of our medical school.

Results*:* it was found that 72.7% (n=24) of pre-clinical and 75.6% (n=28) of clinical students agreed that plastinates can be utilized as an additional supplement tool along with the dissected specimens for learning anatomy. 93.9% (n=31) of pre-clinical and 83.7% (n=31) of clinical students agreed that plastinates can be included in the medical curriculum. 75.7% (n=25) of pre-clinical and 67.5% (n=25) of clinical students agreed that plastinates can accelerate their anatomical knowledge.

Conclusion: Plastinated Silicon models can be utilized to study various vascular patterns of different viscera in intricate details. Such an innovative low-cost, high-impact novel educational tool can be adopted for future research of vascular studies. We can conclude that plastinates can be useful only as an adjunct tool along with the wet specimens for learning anatomy.

Key words: plastination; anatomy; medical education.

Journal of Clinical and Biomedical Sciences

Perception of Undergraduate students of a Medical College about the Family Adoption Programme in Nashik District: A Cross-Sectional Study

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Introduction: The National Medical Commission has initiated the Family Adoption Programme (FAP) in an attempt to produce medical graduates with a community health perspective so that all residents will have access to the medical professionals and thereby will help to attain the national health goals[1].It seeks to improve health equity by giving Indian Medical Graduates an opportunity of hands on learning. The programme will help medical students to become better communicators, comprehend dynamics of rural areas, recognize illnesses and devise solutions to raise the standards of rural households[2]

Methods: This cross-sectional study was conducted over a period of six months in a medical college in Nashik district, Maharashtra. Medical undergraduate students of Phase I, Phase II, and Phase III Part I were the participants in the study. Universal sampling method was applied for selecting the participants. Data was collected using a predesigned, pretested, semi-structured questionnaire through Google forms. Data analysis was performed using appropriate statistical software, and results have been expressed as proportions, means, and standard deviations.

Results: A total of 337 out of 360 (93.61%) participants were studied. Advantages perceived by students were improvement of their knowledge about disease profiles in rural communities, enhanced understanding of community dynamics and the local healthcare delivery system, identification of health problems among family members, their holistic development as future physicians, and gaining hands-on experience in learning attitude, ethics, and communication skills.
Overall, the findings suggest that while logistical and academic concerns were minimal, managing expectations of beneficiary families remains an important area requiring attention for effective implementation of FAP.

Conclusion: The Family Adoption Programme is well accepted and educationally beneficial. Orientation of students and families, clear role definition, and regular faculty supervision can address challenges such as over-expectations. Improved logistical support, scheduling clarity, and periodic feedback will strengthen implementation and promote effective community-based learning in undergraduate medical education.

Key words: Family Adoption Programme, Medical Undergraduate Students, rural communities

Journal of Clinical and Biomedical Sciences

Role of Classical Language Competencies in AYUSH Education: Outcomes of an NCISM-Designed Competency-Based Dynamic Curriculum in Ayurveda, Unani, Siddha, and Sowa-Rigpa

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Introduction: AYUSH systems preserve their theoretical foundations, clinical principles, and epistemological integrity. Sanskrit in Ayurveda (BAMS), Arabic and Urdu in Unani (BUMS), Tamil in Siddha (BSMS), and Bhoti in Sowa-Rigpa (BSRMS) are indispensable for understanding original medical texts and applying authentic system-specific terminology in clinical practice. Strengthening functional language competence.

Methods: NCISM-designed Competency-Based Dynamic Curriculum (CBDC) for classical languages with RWSL in undergraduate BAMS, BUMS, BSMS, and BSRMS programs. The curriculum was examined for structured alignment from Programme Outcomes (POs) to Course Outcomes (COs), teaching–learning activities, and assessment strategies. Language competencies were operationalized through the Reading, Writing, Speaking, and Listening (RWSL) framework. Curriculum mapping focused on the integration of RWSL skills with academic learning, clinical exposure, documentation practices, and communication, with assessments designed to evaluate applied and functional language use.

Results: The CBDC enabled systematic development of language competencies relevant to academic understanding and clinical application. Learners demonstrated improved engagement with original classical texts, clearer articulation of concepts using authentic terminology, and enhanced ability to document and communicate clinical information accurately. Integration of RWSL skills within clinical contexts supported better correlation between textual knowledge and patient care across all four AYUSH systems, while maintaining linguistic and cultural specificity.

Conclusion: The NCISM-designed CBDC effectively embeds classical language competencies within undergraduate AYUSH education. Aligning RWSL-based language learning through PO–CO-LO mapping and assessment in ASU programs, the CBDC strengthens conceptual clarity, clinical precision, and preservation of traditional medical knowledge. Sustained implementation of this framework is essential for maintaining academic rigor and clinical authenticity.

Key words: CBDC; Sanskrit; Arabic-Urdu; Tamil; Bhoti; RWSL

Journal of Clinical and Biomedical Sciences

Digital Professionalism Across Cultures: New Competencies for a Hybrid Healthcare World

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Objectives: In this review, we seek to reconceptualise digital professionalism as a cross-cultural, measurable competence within health professions education. Although digital professionalism is increasingly 'recognised', current competence frameworks often reflect culturally specific assumptions about communication norms, professional boundaries and ethical conduct. This article addresses this gap by examining how cultural context shapes professional practice in digital and hybrid healthcare settings and by proposing a framework aligned with competency-based education principles.

Methods: A conceptual narrative review was conducted, drawing on literature on established concepts such as professionalism and competence frameworks, as well as new literature emerging in the context of digital health, medical education and cross-cultural studies. The review focused on telemedicine, social media learning tools, learner–educator interactions online (in voice threads and blogs), digital professional identities, and the ethical challenges associated with artificial intelligence. The cultural dimensions (values, power distance, language, societal expectations and healthcare system contexts) were analysed. Competency-based education and programmatic assessment principles were used to develop the framework.

Results: Our review describes an organisation with these competences and uses knowledge, skills, attitudes, and professional identity within a formalised framework for cross-cultural digital professionalism. The toolkit pinpoints domain-independent, observable behaviours and entrustable professional activities. Curriculum integration and assessment are discussed beyond the checklist, with strategies such as reflective practice, narrative assessment, and longitudinal feedback.

Implications: Incorporating intercultural digital professionalism into health professions education has significant implications for curriculum, faculty development, assessment, and accreditation. It is critical to prepare digitally competent, ethically sound, and culturally responsive graduates who will ensure safe, just, and professional practice across hybrid health systems.

Conclusion: Students presented with varying perceptions and honest feedback that could be used to enhance the practice of reflective training in the institute.

Keywords: Digital Professionalism, Cross-Cultural Competence, Professional Identity

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Effect of Structured Active Recall Interventions During Didactic Lectures on Student Engagement and Learning Outcomes Among First-Year MBBS Students: An Educational Interventional Study

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Background: Traditional didactic lectures often promote passive learning, leading to declining student engagement and suboptimal knowledge retention. Structured Active Recall (SAR) is an evidence-based instructional strategy that promotes retrieval practice and learner interaction.

Aim: To compare the effect of Structured Active Recall–integrated lectures with traditional didactic lectures on student engagement and learning outcomes among first-year MBBS students.

Methods: A randomized, mixed-methods educational interventional study was conducted among 150 first-year MBBS students. Participants were randomly allocated into intervention (SAR) and control (traditional lecture) groups. Engagement was assessed using the validated Student Engagement in Schools Questionnaire (SESQ), and learning outcomes were measured using standardized pre- and post-session MCQ tests. A crossover design was employed to ensure ethical parity. Statistical analysis was performed using paired and independent t-tests, with $p < 0.05$ considered statistically significant.

Results: Post-intervention SESQ scores showed statistically significant improvement in 7 of 11 engagement domains ($p < 0.05$), with notable gains in cognitive and affective engagement. Mean MCQ scores demonstrated significant improvement following SAR sessions compared to traditional lectures ($p < 0.001$).

Conclusion: Structured Active Recall significantly enhances student engagement and learning outcomes in undergraduate medical education. Incorporating SAR into routine didactic lectures is feasible, scalable, and well-aligned with Competency-Based Medical Education (CBME).

Keywords: Active recall, Student engagement, Medical education, SESQ, CBME

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Impact of Classroom Assessment Techniques on Cognitive Outcomes and Learning Behaviour in Competency-Based Medical Education

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Background: Competency-Based Medical Education (CBME) emphasizes continuous formative assessment and feedback to foster learner-cantered competency development. Classroom Assessment Techniques (CATs) are brief, interactive tools designed to monitor learning during classroom sessions. Their role in shaping medical students' cognitive outcomes and learning behaviours within CBME remains underexplored.

Objectives: To evaluate the effectiveness of CATs in enhancing cognitive skills and learning behaviour among first-year medical undergraduates in a competency-based curriculum.

Methods: A crossover randomized controlled trial was conducted among 125 first-year medical students at a tertiary teaching institution in northeastern India. Participants were randomized into intervention and control groups. The intervention group engaged in four structured small-group sessions incorporating CATs (3-2-1 strategy, memory matrix, application article, and Recall–Discuss–Connect–Summarize [RDCS]), while the control group received traditional small-group teaching. Knowledge acquisition was assessed using a validated 30-item MCQ tool aligned with Bloom's taxonomy. Pre- and post-test scores were analysed using paired and independent t-tests. After a one-month washout, groups were crossed over.

Results: In Phase 1, the intervention group showed a significant improvement in mean post-test scores compared to pre-test scores (14.49 ± 6.62 vs. 24.71 ± 7.83; $P = 0.001$), whereas the control group's improvement was non-significant. Similar findings were observed in Phase 2, with significantly higher knowledge gains in the intervention group (mean gain: 11.42; $P = 0.001$). CATs fostered active engagement, self-reflection, and peer collaboration, contributing to improved learning outcomes.

Conclusions: CATs significantly enhance cognitive skills and knowledge acquisition in CBME compared to traditional teaching. Their integration into routine teaching can strengthen formative assessment, promote self-directed learning, and support competency development in medical education.

Keywords: Classroom Assessment Techniques; Competency-Based Medical Education; Formative Assessment; Cognitive Skills; Medical Education

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Unlocking student engagement: Jigsaw classroom Versus Flipped class room in Medical Physiology education

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Background: Active learning strategies have gained prominence in medical education and among these, the Jigsaw classroom model and the Flipped classroom approach are widely implemented.
To compare the impact of Jigsaw classroom, Flipped classroom (FC), and Didactic Lecture-Based Teaching (DBT) on academic performance, student engagement, and learner perception among first-year MBBS students studying physiology.

Methods: A quasi-experimental study was conducted among 250 first-phase MBBS students at NRI Institute of Medical Sciences, Visakhapatnam, from November 2025 to December 2026. Students were randomly allocated into three groups: FC (n=83), Jigsaw (n=83), and DBT (n=84). Teaching was delivered over 8 weeks using standardized, difficulty-matched physiology topics. Pre-validated teaching materials—including videos, flowcharts, diagrams, and structured reading resources—were shared for the FC group 48 hours prior. For the Jigsaw group, a brief orientation and diagrammatic procedural guide were circulated beforehand. All students received pre-test, post-test, and 8-week retention tests. Data were analyzed using SPSS v29. One-way ANOVA with Tukey's post hoc test was used to compare mean scores across the three groups.

Results: The Jigsaw group showed the highest immediate learning gain with significantly higher post-test scores than FC and DBT ($p<0.05$). Long-term retention was greatest in the FC group ($p=0.048$). DBT showed consistently lower performance than both active learning groups. Feedback indicated that Jigsaw enhanced peer learning and teamwork, while the Flipped classroom improved engagement and pre-class preparedness.

Conclusion: Both Jigsaw and Flipped classroom methods effectively enhance learning in physiology. Jigsaw strengthens conceptual clarity through collaborative learning, whereas FC promotes independent, self-paced learning with superior retention. A blended approach may optimize educational outcomes in medical physiology.

Key words: jigsaw classroom, flipped class room, medical physiology

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Effect of Eating and Drinking Water During Classroom Teaching on Academic Performance Among MBBS Students: A Comparative Study

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Background: Classroom behaviours such as eating or drinking during lectures are increasingly common among medical students. However, their impact on academic performance remains underexplored in medical education settings.

Objectives: To assess and compare academic performance among MBBS students who drank water, and those who consumed food during classroom teaching compared to controls.

Methods: This comparative study included 150 MBBS students, of whom complete data were available for 141 students. Participants were categorized into three groups based on in-class practices: control group (no eating or drinking), water-drinking group, and eating group. Academic performance was assessed using multiple-choice questions (MCQs), short answer (SA) questions, total score, and percentage score. Descriptive statistics were calculated, and group comparisons were performed using one-way analysis of variance (ANOVA).

Results: The control group demonstrated higher mean scores across MCQs, SA questions, total score, and percentage score compared to the water-drinking and eating groups. However, one-way ANOVA revealed statistically significant differences with higher scores among control group compared to eating group for MCQ scores ($p = 0.019$) and total scores ($p = 0.028$). Short answer scores showed overlapping distributions and were interpreted descriptively. There was no statistical difference in score of water drinking group with other 2 groups.

Conclusion: various habits during lectures may cause deviation from sustained attention and cause cognitive distraction or cognitive overload. While drinking water maintains hydration, which favours cognition and memory retention, eating during class may impair learning. Minimizing in-class distractions may support better learning outcomes.

Limitations: Small sample size, single exposure.

Key words: Medical education; classroom behaviour; eating during class; hydration; academic performance; MBBS students

Journal of Clinical and Biomedical Sciences

Exploring Physiotherapy Student's Perception about Reflective Writing: A Mixed-method Study

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Background: Reflection is an active meta-cognitive process of reviewing, analysing and evaluating experiences in order to inform future actions. Enhancing reflective thinking in students is known to improve their critical thinking, problem solving ability, clinical reasoning, making them self-directed learners thereby leading to their overall professional development. There is limited empirical evidence of reflective practice in Indian Physiotherapy students. This study aimed to explore the perception of Physiotherapy students about reflective writing, the challenges faced and their facilitators and barriers after undertaking reflective exercises.

Methods: This exploratory study recruited thirty Physiotherapy interns who had participated in reflective writing sessions during the last 10 months of their course. They were interviewed in a group of 5 about their experiences of the reflective writing task along with any suggestions or feedback to improvise. Responses were analysed using thematic analysis and themes were identified. After the interviews, they were also asked to fill a pre-validated self-developed feedback form to explore their facilitators and barriers which was analyzed using descriptive statistics.

Results: Majority of them (83.33%,n=25) perceived that reflective writing helped them to identify their strength and weakness, enriched their expressive ability (90%, n=27), and improved clinical reasoning skills (43.33%,n=13). About 66.67%(n=20) reported that writing reflection after clinical postings was much easier compared to didactic class. Few of them felt it was very monotonous (46.66%, n=14), found it difficult to express thoughts through writing (40%,n=12) and didn't feel motivated (30%, n=9). Almost 70%(n=21) agreed that they would continue the practice of writing reflections as a professional Physiotherapist. Following key themes emerged from interviews: usefulness of reflection, usability of grading rubric, suggestions for implementation and challenges faced.

Conclusion: Students presented with varying perceptions and honest feedback about reflective writing that could be used to enhance the practice of inculcating reflective training in the institute.

Key words: Reflective writing, Physiotherapy student perception, feedback, reflections

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Cine-Medicine in AETCOM: A New Frontier in Medical Education – An Innovative Interpretative Model

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Introduction: Attitude, Ethics, and Communication (AETCOM) form a foundational component of the MBBS curriculum, aimed at shaping professionally competent, empathetic, and ethically responsible physicians. Traditional teaching methods often struggle to fully engage students or simulate real-life dilemmas. Cinema, as a visual narrative medium, offers a dynamic platform for interpreting complex human emotions, ethical conflicts, and doctor–patient interactions, making it a promising tool for AETCOM teaching.

Objectives

1. To evaluate the effectiveness of cinema-based teaching in enhancing understanding of AETCOM competencies among MBBS students.
2. To assess student engagement, reflection, and interpretative ability through cine-medicine scenarios.
3. To compare cinema-assisted sessions with conventional AETCOM teaching methods.

Methods: A mixed-method study was conducted among 3rd-year MBBS students at Sri Ramachndra Medical college and Research Institute. Selected film clips depicting ethical dilemmas, professionalism, empathy, communication failures, and doctor–patient dynamics were screened during structured AETCOM sessions. Students participated in guided reflection, small-group discussions, and interpretative exercises. Pre- and post-session questionnaires assessed knowledge gain, attitude shifts, and perceived relevance. Qualitative feedback was collected through open-ended reflections and focus-group discussions.

Results: Cinema-based AETCOM teaching resulted in significantly improved student engagement and conceptual understanding. Post-session scores showed higher recognition of ethical principles, empathy cues, and communication strategies compared with baseline. Qualitative analysis revealed increased emotional resonance, better recall of scenarios, and deeper interpretation of professional responsibilities. Students reported that cinematic content made ethical dilemmas more relatable and easier to analyse.

Implication: Integrating cinema into AETCOM teaching provides a powerful interpretative model that complements traditional pedagogy. It enhances experiential learning, promotes reflective thinking, and strengthens the development of core professional attributes. This approach can serve as an innovative, scalable method for competency-based medical education, shaping more empathetic and communicative future doctors.

Perception and Effectiveness of Role Play in teaching Biochemistry to First-Year MBBS Students

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Background: Biochemistry is often perceived as challenging by first-year MBBS students due to its abstract concepts. Innovative teaching–learning strategies such as role play may enhance student engagement and understanding.

Aim: To evaluate the perception and effectiveness of role play as an innovative teaching–learning tool in biochemistry among Phase I MBBS students.

Objectives: To assess students' perceptions regarding the usefulness, engagement, and enjoyment of role play, and to evaluate its effectiveness in improving understanding, retention, and application of biochemical concepts.

Materials and Methods: This prospective, interventional, cross-sectional study was conducted in the Department of Biochemistry at Dr. Vasantrao Pawar Medical College, Hospital & Research Centre, Nashik, among Phase I MBBS students. Selected theoretical topics were taught using role play. Volunteer students were divided into groups and provided with short scripts (5–10 minutes) depicting biochemical principles. A pre-test using multiple-choice questions was administered before the activity, followed by a post-test and a structured feedback questionnaire. A total of 150 students participated, and 119 students completed the feedback form.

Results: Student perception of role play was highly positive. Among respondents, 79.5% strongly agreed and 17.9% agreed that role play was innovative and worthwhile, while 2.6% were neutral; none disagreed. Similarly, 76.9% strongly agreed and 20.5% agreed that role play enhanced engagement. Learning outcomes improved significantly, with the mean pre-test score increasing from 6 to 10 in the post-test.

Conclusion: Role play is an effective and well-accepted teaching–learning strategy that enhances engagement and conceptual understanding in biochemistry among undergraduate medical students

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Impact of case-based learning on the learning approaches and outcomes of phase I MBBS students

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Introduction: Case-based learning (CBL) is an inquiry based teaching-learning method with several educational benefits. Students adopt variable learning approaches like deep, strategic, surface learning, which affects their learning outcomes. Using appropriate educational inputs could positively influence students' learning approach and outcome. This study aimed to evaluate the effect of CBL in influencing students' learning approach and outcomes.

Methods: This quasi-experimental study involved 147 consenting phase I MBBS students. Students' prior learning approaches were determined using pre-validated ASSIST short form questionnaire. Three CBL sessions in Biochemistry topics of clinical relevance were conducted, followed by formative assessments using descriptive HOTS questions and students' response evaluation by SOLO taxonomy based rubric scores. Changes in students' learning approach in the topics taught were reassessed by ASSIST questionnaire after a month. Students' learning approach before and after CBL, their successive CBL scores were compared using appropriate statistical analyses.

Results: Students' assessment scores did not vary much during successive CBL sessions. But their learning approach differed after CBL, with increased deep learning and significant decline in surface learning ($p < 0.05$). Drastic trends in below basic and basic student performance categories were detected between successive CBL sessions ($p < 0.05$), probably due to the difficulty level of CBL-3 topic; while progressively increasing advanced performance showed learning outcome benefits of CBL. Ultimately, 92(62.6%) and 87(59.2%) students showed improvement in deep and surface learning approaches respectively ($p < 0.05$).

Conclusion: CBL is an effective teaching method in preclinical phase for its benefits in transforming deep learning approach and advanced learning outcomes.

Key words: Case-based learning, Learning approach, Learning outcome

Journal of Clinical and Biomedical Sciences

Mindfulness Meditation and Quality of Life: A Correlational Study

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Background: Today we are all living in a world with lots of stress and pressure. One has to first understand themselves and then he/she can better understand society. When the mind is in a calm state then anyone can take decisions aptly and think positively. Mindfulness means being in the present moment. Mindfulness involves awareness of what is happening in the external world and internal world. Whatever you are thinking, feeling or sensation, being in the present moment without judgment is called Mindfulness. Most of the mindfulness principles derived from Buddhism even though origins of mindfulness in Hinduism. Buddha taught mindfulness as "ana-pana-sati". Ana means inhaling, Pana means exhaling and Sati equal to awareness which means breath with awareness. Mindfulness-Based Stress Reduction Technique (MBSR) developed by Jon kabat-zinn in 1979. Practicing mindfulness is important because when we practice mindfulness regularly it improves consciousness and further leads to accurate perception which means we can perceive the reality as it is. The present study examines the correlation between quality of life and mindfulness meditation.

Objectives: The main objectives of this study are: To measure the quality of life among mindfulness practitioners and To measure the correlation between mindfulness and quality of life.

Sample: The sample was collected from 126 individuals who are practicing mindfulness meditation regularly from the different meditation centers in and around Rajamahendravaram. A non-probability convenience technique was adopted for this study.

Measures: Two measures were used for this study. 1) Five Facet Mindfulness Questionnaire (FFMQ) developed by Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Measure Mindfulness domains include observation, describing, acting with awareness, non-judgmental inner experience and non-reactivity. 2)Quality of Life questionnaire (WHOQOL-BREF) to measure quality of life domains. Developed by World health organization (WHO) in 1996. The domains include Physical Health, Psychological Health, Social Relationships, Environment.

Findings: It was noted that there is a positive correlation between observing, describing, non-judging of inner experiences and non-reactivity to inner experiences and the domains of quality of life. Acting with awareness domain of mindfulness is not correlated to the domains of quality of life. It was also observed that there is a high correlation among the domains of mindfulness meditation and the domains of quality of life. Practitioners who practice mindfulness meditation daily can improve their quality of life in all aspects.

Key words: Mindfulness Meditation, Quality of Life, Ana-Pana-Sati.