



### BMS e-CON-2020

An International e-conference on “**Emerging Trends in Research-Emphasis on Basic Medical Sciences**” BMSe-CON-2020 was organized by the Departments of Anatomy, Biochemistry, Physiology and Centre for Biomedical research of Aarupadai Veedu Medical College, Pondicherry (Vinayaka Missions Research Foundation) from 17<sup>th</sup> -19<sup>th</sup> September 2020. The conference had 1210 confirmed registrations and 179 papers for oral and 44 for Young Research Scholar Award presentations in Faculty, PhD, Postgraduate and Undergraduate categories. E-Posters competition was also held for undergraduates. There were 20 eminent national and international speakers. Apart from guest lectures there was a panel discussion on “Enabling research in the Institute” and an e-workshop on Molecular techniques - Basics for beginners.

**The theme of the conference:** “Emerging Trends in Research-Emphasis on Basic Medical Sciences” was chosen because basic science research is not only essential but is also crucial to enhance knowledge and help understand a particular subject in depth. The information thus gathered with respect to the changes in the cells and the molecules associated with any disease process help clinicians to offer better health care delivery. Research demands critical thinking, logical reasoning and creative application by exploring research trends. The next generation Professionals should be aware of the latest research advances and have to be assertive in their practices which should be evidence based for efficient and effective patient care.

**Focus of this conference** was on:

Recent advances in basic medical science research and its application in diagnostics and medical education with special emphasis on:

- a. Artificial intelligence
- b. Medical robotics
- c. Alternate animal models for research
- d. Molecular biology
- e. Cytogenetics

## Evaluation of Relationship Between Anatomical Variations of Sinonasal Cavity and Chronic Rhinosinusitis Through CT Scan at a Tertiary Care Center in Central India

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**Background:** The relationship between Chronic Rhino Sinusitis (CRS) and Sinonasal cavity is under debate. Their role in pathogenicity and chronicity of CRS warrants further detailed study.

**Aims and objectives:** To find out any possible association between anatomic variations of sinonasal cavity with chronic rhinosinusitis in Central India.

**Materials and methods:** 100 cases, in the age group of 18 to 42 years referred with clinical features of CRS not responding to medical management for 8 weeks or more to the radiologists, were subjected to CT of the paranasal sinus region as a part of routine medical treatment. The control group included 100 patients who had undergone CT scan of the paranasal sinus region for a reason other than CRS. Resulting data were calculated and statistically analyzed.

**Results:** Agger nasi cells were the most common anatomical variation present in 68.5% of the study population followed by deviated nasal septum 64%, Concha bullosa 57%, Paradoxical middle turbinate 20.5% and Pneumatized uncinate process 1.5% and Haller cells 15%. Frequency of occurrence of these variations between the CRS group and the control group was not significant ( $p > 0.05$ ). Hence, no relationship exists between the presence of anatomical variations taken up in the study and pathogenesis and chronicity of CRS.

**Conclusion:** These anatomical variations can be used as a tool for early prediction of CRS and hence substantiates the need for lifestyle modification to counteract this disease at its nascent stage. This study and other studies like this may also be of immense value to ENT surgeons and radiologists in preventing the damage to these variations during a surgery for sinusitis. A more descriptive study is warranted for further understanding of the role of these variations in etiopathogenesis of CRS.

# An Analysis of Arches of the Foot: A Comparison of Existing Footprint Indices with Newly Proposed (PSA) Index in Grading the Severity of Pesplanus (PP) and Pescavus (PC) Using a Self-Designed Podoscope

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**Background:** The foot is a pliable platform, which acts as a shock absorber and also propels the body forward during locomotion. Morphometric analysis and clinical assessment of the arches of foot were developed to compute the geometry as well as the purpose of diagnosis of certain ailments.

**Aims and objectives:** The aim of the study was to develop a grading system of Pesplanus (PP) and Pescavus (PC). The purpose of this study was to establish a new grading system of PP and PC based on the severity by a newly proposed parameter (PSA) using a self-designed podoscope device.

**Materials and Methods:** A total number of 416 healthy participants 208men and 208women aged 21 to 50 years were included in this study. Measurements of newly proposed parameter and existing parameter were observed using a self-designed podoscope.

**Results:** The statistical analysis were undertaken using the SPSS Statistical software (version 16.0) and executed at 95% confidence interval. Mean and standard deviations (SD) were observed by descriptive analysis. Chi – square test has been performed to find the association, dependency, and validity of the newly proposed parameter PSA index with the existing parameters.

**Conclusion:** The podoscope and the newly proposed PSA index was designed in a simplified manner, so it does not require a technical person to handle it. The information obtained by this study will be useful for accurate diagnosis and to record the prognosis during the treatment of PP & PC, and it will be also helpful in the field of orthopaedics.

## A Study on Perforated Cervicothoracic Ganglion in Indian cadavers

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**Background:** Cervicothoracic ganglion (CTG) is of surgical importance for diagnostic and therapeutic purposes in chronic regional pain syndromes (CRPS), herpes zoster, refractory angina and vascular occlusive disorders, etc. Occasionally CTG could be perforated by the vertebral artery which might lead to complications during ganglionic block.

**Aims & Objectives:** Aims of the study is to find the prevalence of the perforated CTG in Indian cadavers.

**Methods & Materials:** The present descriptive study included 21 formalin-embalmed cadavers (male-15, female-6) utilized for undergraduate teaching in the Department of Anatomy. Out of twenty-one cadavers, two specimens on the right side were excluded from the study due to adhesion and damage to the ganglion. A total of 40 specimens (19- right; 21-left) were included in the study.

**Results:** CTG and inferior cervical ganglion were observed in 87.5% and 12.5% respectively. Perforated CTG was observed in 5% (2 specimens) on the left side. The vertebral artery originated from the subclavian artery, coursed anterior to CTG and pierced the ganglion near its superior pole, in both the specimens. The distance between CTG and midline were  $20.21 \pm 2.61$  mm on the right side and  $18.47 \pm 2.81$  mm on the left side.

**Conclusion:** In cases of perforated CTG, there is a possibility of puncturing the vertebral artery during CTG block and the knowledge about this variation might aid the anaesthetists, neurosurgeons and surgeons in preventing complications during therapeutic and diagnostic ganglionic block.

## Chin Tuck Posture to Prevent Aspiration and Dysphagia

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**Background:** Certain neck postures have been reported as a remedial treatment to alleviate dysphagia and to prevent aspiration.

**Aims and objectives:** This study investigated the effect of various neck postures on laryngopharyngeal inlet morphometry while swallowing.

**Materials and Methods:** Video Nasopharyngoscopy was done in 35 healthy individuals, in three neck postures namely, head neutral (HN), chin down (CD) and chin tuck (CT) to study the morphometric parameters of laryngopharyngeal inlet during the pharyngeal phase of swallow. Anteroposterior diameter (AP), transverse diameter (T), cross sectional area (CSA) and aspect ratio (AP/T) were the parameters studied in these three neck postures. Changes in these parameters were analyzed using ANOVA and Kruskal Wallis H test, with respect to these three neck postures.

**Results:** Both the diameters showed individual variations in these three neck postures. Aspect ratio remained almost the same. Laryngopharyngeal inlet showed a statistically significant increase in cross sectional area when the neck was flexed from head neutral to chin tuck posture ( $P = 0.01$ ).

**Conclusion:** Chin tuck posture results in increased cross-sectional area of laryngopharyngeal inlet, leading to development of negative pressure gradient in the hypopharynx, pulling the bolus towards the esophagus, away from the larynx. And the wider cross-sectional area in chin tuck posture lets the bolus to pass through easily, reducing dysphagia and preventing aspiration.

## Comet Assay-An Additional Tool in the Screening Methodology for the Cervical Cancer

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**Background:** Cervical cancer is the 4th commonest cancer in the world and 2nd in India. An effective screening methodology is essential to reduce the burden of cervical cancer.

**Aim & Objectives:** The present study aimed to estimate the DNA damage in patients with cervical cancer and to find out its correlation with oxidative stress marker (Plasma Malondialdehyde, MDA) and to compare with controls. **Materials and Methods:** This study included 49 cervical cancer cases and 49 controls to measure the DNA damage parameters such as Comet length, Head diameter, Percentage of DNA in comet head, Tail length, Percentage of DNA in comet tail using comet assay technique and the oxidative stress marker (Plasma Malondialdehyde), using TBARS ELISA method.

**Results:** The Comet parameters (Comet length, tail length, percentage of DNA in comet tail) representing the DNA damage were significantly high in cervical cancer cases than the controls. The Comet parameters (Head diameter, percentage of DNA in comet head) representing the undamaged/Mild DNA damage were significantly high in controls than the cervical cancer cases. A positive correlation between the plasma MDA, and the comet tail length was observed.

**Conclusion:** The increased levels of Comet parameters and their positive association with plasma MDA indicates the high level of DNA damage in cervical cancer patients than controls. Such a combination of comet assay and estimation of plasma MDA can be used as a predictive test along with the existing screening methods such as PAP smear, etc., for early detection and risk assessment of cervical cancer in the vulnerable population.

## Microvasculature of Anterior Cruciate Ligament by Immunohistochemistry Using Ve-Cadherin

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**Background:** The anterior cruciate ligament (ACL) is one of the knee joint stabilizer. It helps in preventing excessive anterior mobility and maintaining the rotational movements of the knee joint. Excessive movement or any abnormal movements affecting the knee joint pose ACL under risk of injury. The injured ACL was managed by surgery as it was an option of treatment owing to its poor vascularity. The knowledge of distribution of the blood vessels within the ACL was not clear and only a few studies were reported in the past. For successful restoration of knee kinematics replacement of native ACL is more important. The more vascularized part of the ACL can be replaced with native ACL with biological augmentation. Therefore, an attempt was made to assess the microvasculature of the ACL.

**Aims and objectives:** To study and compare the distribution of blood vessels among the proximal, middle, and distal parts of cadaveric ACL.

**Materials and methods:** The ACL blood vessel distribution was assessed using 48 cadaveric ACL tissues using immunohistochemistry. The antibody against the transmembrane protein VE-Cadherin was targeted to study the blood vessels. The ACL was divided into three parts as proximal, middle and distal. The number and luminal area of blood vessel among the different parts of ACL were assessed and compared.

**Results:** The studied ACL showed the blood vessel distribution was more on the peripheral parts of ACL than the middle part of ACL.

**Conclusion:** The knowledge of the ACL vasculature may help in selecting the preferred treatment for injured ACL. With the native ACL the normal anatomical function of ACL can be reproduced, and the postoperative complications can be reduced.

## Cytogenetic Effects of Formaldehyde Inhalation in Wistar Rats - An In-Vivo Study

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**Background:** Human beings are commonly exposed to many pollutants in the environment which cause deleterious health problems. Effects of indoor Volatile Organic Compound (VOC) especially Formaldehyde (FA) inhalation is still a debatable statement whether the cytogenetic toxicity happen during low level of exposure. In this scenario we are interested to assess genotoxicity in laboratory rodents.

**Aim and objectives:** To assess the cytogenetic effect of formaldehyde inhalation in wistar rats.

**Materials and Methods:** This Study constituted of 30 (15 Male & 15 Female) Wistar Rats. Experiment was conducted after obtaining IAEC clearance. Animals were exposed to formaldehyde vapor as per methodology. Bone marrow cells were harvested, and Micronucleus Test (MNT) Assay was performed.

**Results:** Polychromatic Erythrocytes (PCE) and Normochromatic Erythrocytes (NCE) were observed under microscope. Frequency and ratios were determined in each group. Data was analyzed using non-parametric test which shows significance in PCE/NCE ratio. All the data showed significant difference between exposure group and in both genders. Results shows PCE were significantly increased in exposure group when compared to control group ( $p < 0.05$ ). Significant differences were also found between male and female rats. But there was no major difference between 1 hr and 1.5 hr exposure groups

**Conclusion:** Exposure of FA at sub-chronic level had an impact on cytotoxicity which was expressed on pluripotent stem cells irrespective of duration.

## Pre-COVID Conventional Offline Teaching and Intra-COVID Online Teaching Comparison on Medical Students

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**Background:** Due to covid-19 lockdown the teaching of medical students got a sudden change from conventional teaching to online teaching. Batch 2019-20 of MBBS 1<sup>st</sup> year students has experienced both kinds of teaching & assessment pre & during covid-19 respectively. Hence present study was done to evaluate & analyze the teaching learning as well as assessment in present time.

**Aims and Objectives:** The aim of the study is to compare the student's perception regarding a) Online & offline teaching b) Online & offline way of assessment.

**Materials and methods:** The present study was conducted on 242 MBBS 1<sup>st</sup> year students at Baroda Medical College, Vadodara, Gujarat. Feedback of the students was taken to evaluate various parameters regarding teaching & assessment with the help of google form. Data was collected & analyzed with the help of Microsoft Excel.

**Results:** According to majority (47.2%) students, online teaching is more flexible however in other parameters, majority of the students preferred offline teaching. According to 44.5% student's online assessment method is more convenient & 52.1% students feel less anxiety in online assessment. According to 53.2% students subject knowledge is better expressed in offline assessment. 92.4% students feel Practical skills & 74.9% students feel writing skills are better demonstrated in offline assessment.

**Conclusion:** Online teaching is immensely useful in the time of lockdown. The teaching-learning ways and assessment are conducted successfully and in fact have well acceptance by the medical students. However, majority of the students has shown preference for offline teaching methodology.

## Awareness Among 1st Year MBBS Students on Practice of Hygiene and Risk of Infections Including COVID-19 in Dissection Theatre

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**Background:** Cadaveric dissection under Anatomy is an indispensable part of MBBS course and is the fundamental basis of learning surgery and allied subjects. Cadavers may pose a risk to those who handle them as they house pathogens leading to diseases like Gertsman-Straussler-Scheinker Syndrome, Hepatitis B and communicable diseases due to the close proximity of the learners to each other and the cadaver. This is significant in today's times because of the unprecedented spread of COVID-19 and probable future communicable diseases.

**Aims and Objectives:** The primary objective of this study is to ascertain whether medical students know about the importance of hygiene in Dissection Hall and if they follow the prescribed hygiene guidelines regularly as they may be more susceptible to infections due to lapses in maintenance of hygiene.

**Materials and Methods:** A survey study was conducted via Google forms with 30 questions on 578 1st year medical students of MBBS course across India and data was analysed using MS Excel.

**Results:** 39.4% students admitted to dissecting with bare hands, 77.5% admitted to sanitizing their hands only after dissection, 34.3% said they don't dispose waste materials and debris in containers marked as INFECTIOUS WASTE, 30.6% had not been vaccinated against Hepatitis B, 66.8% admitted that they had suffered from hypersensitivity, emesis owing to dissection. 41% participants said cadaveric dissection should be supplemented with prosected specimens, virtual models in the COVID-19 era and thereafter.

**Conclusion:** We have made the students more conscious about the need of proper sanitization and hence this would reduce their susceptibility to COVID-19 and other communicable diseases as hygiene has assumed immense importance during the times of COVID-19.

## Comparative Study of Morphometry of Portal Veins by Cast Method in Correlation with Contrast Enhanced Computer Tomography

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**Background:** The blood supply to liver is supplied by hepatic artery which contributes to about 25% to 30 %and 70%-75% from the portal vein. The morphometry of portal veins is quite essential to decide the size of the stent during Trans jugular Intra parenchymal Porto-Systemic Shunt (TIPSS) procedure in cases of portal hypertension and Budd chiari syndrome. Hence the knowledge of morphometry of portal veins will guide hepato-biliary surgeons and radiologists.

**Objective:** To study the morphometry of portal vein and its branches (length, diameter) by cast method and 3D reconstruction of CECT scan method.

**Material and methods:** Eighty livers used in this study was retrieved from human cadavers of postmortem examination done on blunt adominal trauma death cases (who underwent CECT scan) from the Departments of Forensic Medicine of JSS Medical college and Mysore Medical College. The liver was resected, and silicone mixed with blue colour was injected into portal vein. The soft tissue of liver was dissolved, and measurements of portal veins were taken using digital slide calipers. Retrospectively CECT scan images of deceased was collected from the Radiology Department of respective hospitals where the patients received treatment prior to death. Axial and post processed 2D and 3D reformations contributed for accurate evaluation.

**Results:** The length and diameters of main portal vein, right portal vein and left portal vein were analysed using descriptive statistics for Cast and CECT scan methods. There was significant difference observed in both the parameters ( $p < 0.05$ ).

**Conclusion:** This study highlights the portal vein morphometry observed in detail in the Indian population. The cast method is better compared to CECT scan method to predict the accuracy of morphometry of vessels of liver.

## Intervertebral Disc Bulge: Prevalence in Home Makers – A Cross Sectional MRI Study

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**Background:** Intervertebral disc (IV) bulge was associated with the occupation of a person and studies have been done to assess the same. This study was initiated to find out the prevalence of IV-disc bulge in full time home maker females.

**Aim & Objective:** The aim of the study is to find the prevalence of IV Disc Bulge in patients who are full time home makers. The objectives are to find out the correlation between the IV Bulge, Age and BMI of full-time home makers.

**Materials and methods:** This study included 150 female full-time homemakers from 23 to 84 years of age, who underwent MRI imaging of spine in the Department of Radiology in Sri Ramachandra hospital, Chennai. The I- disc bulge were analyzed in both sagittal and axial MRI images of the spine.

**Results:** 134/150 (89%) patients presented with IV-disc bulge. About 35% of patients had complaints of Neck pain, 60% had complaints of low back pain. The pain was found to be Acute in 43% of patients, subacute in 3% and Chronic in 54% of patients. Further details to be discussed in the session.

**Conclusion:** Studies have been done to find out the occupational exposure that would affect the spine. This study emphasizes that IV-disc pathologies not only affect the paid occupations but also the full-time homemakers.

## The Anatomical Study of Mitral Valve in the Human Cadaveric Hearts

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**Background:** The unimpeded forward flow of blood across the mitral orifice depends upon a coordinated interaction between the mitral annulus, leaflets, chordate tendinae& papillary muscle.

**Aim & Objectives:** To study the design of the normal mitral valve of cadaveric hearts for the conservative surgical techniques.

**Material & methods:** 50 heart of embalmed adult human cadaver of both sexes were taken from the department of anatomy, vydehi institute of medical sciences & research centre, Bangalore. The annular diameter, circumference, length, breadth of leaflet & area of mitral valve by using vernier caliper, were measured using measuring scale, cotton thread & magnifying lens.

**Results:** The length of anterior leaflet in males ( $2\pm 0.36\text{cm}$ ) was more than females ( $1.98\pm 0.29\text{cm}$ ), length of posterior leaflet in males ( $1.29\pm 0.24\text{cm}$ ) was more than females ( $1.20\pm 0.18\text{cm}$ ), breadth of anterior leaflet in males ( $2.85\pm 0.55\text{cm}$ ) was more than females ( $2.83\pm 0.32\text{cm}$ ), breadth of posterior leaflet in males ( $3.99\pm 0.58\text{cm}$ ) was more than females ( $4.01\pm 0.43\text{cm}$ ). circumference of mitral valve in males ( $8.19\pm 1.01\text{cm}$ ), was more than females ( $7.76\pm 0.99\text{cms}$ ), diameter in males ( $3.10\pm 0.40\text{cm}$ ) lesser than females ( $3.26\pm 0.48\text{cm}$ ), area of mitral valve in males ( $5.45\pm 1.34\text{cm}^2$ ), more than females ( $4.89\pm 1.20\text{cm}^2$ ). There was no significant difference between male & female values of mitral valve annulus.

**Conclusion:** Knowledge of normal measurements of the component parts of the valve is essential for the surgeon during operation to assess the exact mechanical reason for valve insufficiency & in development & manufacture of prostheses for valvuloplasty.

## Morphometry of Biceps Brachii Muscle and Its Correlation

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**Introduction:** The anatomy of the distal biceps tendon and its insertional anatomy to bicipital tuberosity is important to understand the pathophysiology of tendon rupture and in surgical repair of the ruptured tendon. The aim of the present study was to evaluate the relationship between biceps brachii parameters with the tendon insertion parameters.

**Objectives:** 1) To estimate the strength of association between the parameters of biceps brachii muscle, tendon and its aponeurosis, 2) To estimate the side differences in the parameters of biceps brachii muscle, tendon and its aponeurosis.

**Materials and methods:** The linear parameters were measured using digital Vernier calliper and the angular measurements using Image J software.

**Results:** The mean and standard deviation were  $8.70 \pm 1.64$  mm for perimeter of biceps brachii muscle,  $66.35 \pm 12.02$  mm for length of distal biceps tendon,  $20.54 \pm 0.77$  mm for distance between radial head and radial tuberosity,  $16 \pm 2.89$  mm for footprint length,  $7.43 \pm 1.43$  mm for footprint breadth,  $19.35 \pm 1.93$  degrees for lacertus fibrosus angle and  $16.01 \pm 1.88$  mm for lacertus fibrosus width. Side differences were observed for the total length of the distal biceps tendon. There was a positive correlation between the biceps brachii perimeter and footprint dimensions. Conclusion: These findings help in understanding the biomechanical aspect of the distal biceps tendon insertion.

## Study of variations in the origin of right and left coronary arteries using angiogram images.

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**Background:** Coronary arteries are the vital arteries supplying blood to the heart during diastole. Congenital anomalies of these arteries have diverse pattern and pathophysiology causing sudden mortality. Hence it is vital to study its variations.

**Aims and Objectives:** To study and observe the variations of origin of right and left coronary arteries.

**Materials and Methods:** 100 angiogram images of individuals who underwent screening for coronary artery disease were retrospectively studied after obtaining consent from both sexes with age interval 25 – 80 years. The pattern of origin of right and left coronary arteries was observed and its variations were noted. Results were tabulated and studied with appropriate statistical analysis.

**Results:** Right coronary artery was observed to originate from the anterior aortic sinus in 95% of the individuals. In 2% it originated from left posterior aortic sinus in a separate ostium and in 3% it was seen to have high origin (above sino tubular ridge). Left coronary artery originated from left posterior aortic sinus in 90% of the individuals. In 10% left main coronary artery was absent, left anterior descending artery and left circumflex artery directly originated from individual separate ostium in left posterior aortic sinus.

**Conclusion:** 95% of the right and 90% of left coronary arteries originated commonly from the respective coronary ostium. 5 - 10% variations in origin of right and left coronary arteries were noted in this study. Knowledge of these variations will be a guide for the interventional cardiac procedures and enhance the significance of early screening of coronary artery anomalies.

## **A Study of Morphological Changes in Hyrtl's Anastomosis of Umbilical Arteries Associated with Gestational Diabetes and in Comparison with Normal Pregnant Women**

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**Background:** Gestational diabetes mellitus having a great effect on the structure of the umbilical cord vessels can affect the hemodynamic in these vessels and bring variations in the anastomotic pattern of umbilical arteries and mode of umbilical cord insertion. Hyrtl's anastomotic pattern and its correlation to cord insertion has so far not been studied in umbilical cords of GDM mothers.

**Aims & Objectives:** A study on Hyrtl's anastomosis in GDM and normal pregnancy helps to understand the anatomy exhibited by the different groups and to add to the already existing quantum of knowledge.

**Materials & Methods:** 34 GDM and 23 normal umbilical cords attached to placenta were procured from the operation theatre and labour room, department of Obstetrics and Gynecology, AarupadaiVeedu Medical College, Pondicherry.

**Results:** The present study reveals that the characteristics of Hyrtl's anastomosis differ in the umbilical cords of GDM mother from that of normal mothers by adopting anastomosis by branching pattern and there do not exist a correlation between the Hyrtl's anastomosis and cord insertion in both groups.

**Conclusion:** GDM has heavy toll on vascular structure of umbilical cords and placenta affecting the hemodynamic of fetoplacental circulation.

## Morphology of Middle Cervical Ganglion in Indian Population: A Cadaveric Study

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**Background:** Middle cervical ganglion, the smallest of the three cervical ganglia is inconsistent as compared to the presence of the superior and inferior cervical ganglia. Prevalence of MCG varies with different studies from 33.3% to 58.5%. MCG is usually located at the level of C6 vertebra, but it can be located anywhere from C5 to T1 vertebrae. Incidence of double MCG may vary from 2.9% to 10%.

**Aim:** Aim of the study is to analyse the morphology of MCG in Indian cadavers.

**Methods & Materials:** The present descriptive study utilised 21 formalin-fixed cadavers (male-15, female-6) which were available for undergraduate teaching in the Department of Anatomy. A total of 39 specimens (18-right; 21-left) were available for the study (three specimens were excluded due to damaged sympathetic trunk). Prevalence and morphology of the ganglion were observed, and data analysis was done.

**Results:** MCG was present in 74.3%. Single MCG was observed in 69.23%. Double MCG was observed in 5.13% of which one was a bifid MCG. The mean length, width and thickness of MCG were  $8.89 \pm 7.01$  mm,  $3.57 \pm 1.48$  mm and  $1.17 \pm 0.59$  mm respectively. Distance from midline to MCG was  $16.61 \pm 3.22$  mm on the right side and  $16.3 \pm 4.42$  mm on the left.

**Conclusion:** Owing to its variation in the location as well as morphology, MCG could be damaged during procedures such as lymph dissection of the neck or radiofrequency ablation in thyroid tumours. Understanding the variant anatomy of MCG might help the neurosurgeons and surgeons in preventing complications during such procedures.

## A Rare Variation in the Blood Supply of Gluteal Region – a Case Report

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**Introduction:** The inferior gluteal artery commences from the anterior division of the internal iliac artery within the pelvic cavity. It enters the gluteal region by passing through the greater sciatic foramen below the piriformis muscle and circulates oxygenated blood to the gluteal muscles, hip joint and the thigh.

**Case description:** During routine dissection of the gluteal region for undergraduate medical students, in one adult male cadaver, we found a rare variation of absence of inferior gluteal artery on the right side. The superior gluteal artery was arising from posterior division of internal iliac artery passing through the greater sciatic foramen and entered the gluteal region above the piriformis muscle. The artery was supplying gluteus medius and maximus muscles giving an additional large branch which accompanied the inferior gluteal nerve and supply the adjacent muscles and took part in cruciate and trochanteric anastomoses.

**Discussion:** Absence of inferior gluteal artery is rarely reported in the available literature whereas the variant origin and the branching pattern of the superior and inferior gluteal arteries are well documented.

**Conclusion:** In case of compression of superior gluteal artery especially during absence of inferior gluteal artery may cause loss of blood supply to gluteal muscles which can lead to claudication.

## Prevalence of Ligamentum Teres Femoris in Indian Population

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**Background:** The ligamentum teres femoris (LTF) is an intra-articular and extrasynovial structure extending from the cotyloid fossa of the acetabulum to the fovea on the head of femur. Recent anatomical, biomechanical and histological studies have proposed that LTF has an important function in delivering vascular supply to the developing femoral head as well as providing proprioception and nociception to the hip joint, and acts as a secondary stabilizer of the joint. The prevalence and morphology of LTF is not known in Indian population.

**Aims & Objectives:** To determine the prevalence of ligament capitis femoris in Indian population.

**Material & Methods:** The sample consisted of 22 formalin-embalmed cadavers (Male-17; Female-5) available in the department of Anatomy. Forty-four hip joints (Right-22; Left-22) were dissected to visualize the LTF and its presence and morphology was noted.

**Results:** LTF was present in 95% joints and was band-like and flattened in profile. It was absent on the left side in one male cadaver (2.3%, 1/44). On the right side of the same cadaver, ligament was rudimentary. LTF was triangular in 64% (27/42) and rectangular in 26% (15/42). The mean length of the LTF was  $30.8 \pm 4.8$  mm.

**Conclusion:** The knowledge from the prevalence and morphology of the ligament would supplement the existing literature for better understanding of the structure and function of the ligament. It would also be likely to be valuable during reconstructive arthroscopic surgeries for hip instability due to LTF tear and fracture-dislocations of hip joint.

## A Study on the Occurrence of Wormian Bones in Adult Dry Skulls

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**Background:** Sutural or wormian bones are islands of bone that are commonly found in the sutures of the skull mainly along the lambdoid suture. These sutural bones which are irregular in size, shape and number may arise from separate centres of ossification. The prior knowledge about the Wormian bones is important because they are present in normal individuals as well as in various disorders such as osteogenesis imperfect, rickets, etc.

**Aim & Objectives:** To study the occurrence of wormian bones in adult dry skulls.

**Materials and Methods:** The present study was carried out on 95 adult dry human skulls in the department of Anatomy, Adichunchanagiri Institute of Medical Sciences, B G Nagara. Skulls with fractures and deformities were excluded from the study. Intact skulls were cleaned thoroughly and observed for the presence of wormian bones along the sutures of skull.

**Results:** Out of 95 skull bones studied, 24 (25.26%) skulls showed the presence of wormian bones. We also observed that maximum number of such bones (single or multiple) were present along the lambdoid suture followed by lambda, asterion, sagittal suture & coronal suture. A very small wormian bone was also found near the bregma of the skull.

**Conclusion:** The awareness about the occurrence of wormian bones and their topographical distribution will guide the clinicians mainly neurosurgeons in their practice. These bones mimic fracture lines in radiograph; therefore radiologists must also be aware of this normal variation.

## Sexual Dimorphism of Foramen Magnum in Chambal Region of M.P

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**Background:** Foramen magnum is the largest foramen of cranium. It can be evaluated very clearly in routine CT scan due to its central position. Being one of the denser part of bony skull chances to be recovered intact from scene of crime increases and therefore valuable for research purpose.

**Objective:** To find out the reference values of foramen magnum dimensions as an alternate area for gender estimation especially for Chambal region of MP.

**Materials and Methods:** CT images of 200 subjects (100 male, 100 female) of 18-65 years of age group from Chambal region, were collected. The largest Antero-posterior and Transverse diameters of foramen magnum were measured using electronic caliper on DICOM viewing software.

**Results:** The mean( $\pm$  SEM) Antero-posterior and Transverse diameter of male was  $3.596 \pm 0.027$  cm and  $3.046 \pm 0.022$  cm respectively which were significantly ( $p < 0.0001$ ) greater than those of female with  $3.163 \pm 0.029$  cm and  $2.715 \pm 0.018$  cm respectively. Using Analysis of variance 84% of male and 81% of female Antero-posterior diameter; and 86% of male and 78% of female transverse diameter were sexed correctly. The overall accuracy of correct diagnosis was 85% in male and 79.5% in females.

**Conclusion:** The above reference values of foramen magnum dimensions by CT scan can be valuable to differentiate male from female skull to some extent as an additional or only method in skull remains, when other parameters were inconclusive in medico-legal cases. Similar studies can be conducted for other regions as well.

## Yoga Poses as Experiential Learning Techniques For The Musculoskeletal System in Undergraduate Anatomy Courses

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**Background:** Integrating lecture and yoga in human anatomy course can be difficult for undergraduate students. Yoga practice emphasizes the relationship of the breath and the spine. By viewing all the other body structures in light of their relationship to the breath and spine, yoga becomes the integrating principle for the study of anatomy. For yoga practitioners, anatomical awareness is a powerful tool for keeping the body safe and mind grounded in reality. My intention is to present the key details of anatomy that are of the most value and use to people who are involved in yoga, whether as students or teachers.

**Aims and objectives:** This study sought to discuss the effectiveness of yoga poses as experiential learning techniques for the musculoskeletal system.

**Materials and methods:** 30 First MBBS students practicing yoga in yoga class conducted by college yoga club were participated. Self administered pre-structured questionnaire were used to record their views using Likert scale (scored from strongly agree to strongly disagree) about the usefulness of yoga for health promotion and discuss the effectiveness of yoga poses as experiential learning techniques for the musculoskeletal system.

**Results:** Study revealed that 75% participants were agreed for the usefulness of yoga as health promoting maneuver and yoga poses as experiential learning techniques for the musculoskeletal system.

**Conclusion:** The context that yoga provides for the study of anatomy is rooted in the exploration of how the life force expresses itself through the movements of the body, breath, and mind. Therefore, we can benefit immensely from a process that enables us to think more clearly, breathe more effortlessly, and move more efficiently.

## Morphometry of Flexor Tendons of Forearm- A Cadaveric Study

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**Introduction:** A thorough understanding of muscles of forearm serves as the foundation for effective surgical intervention such as repair of tendon, tendon transfer and tendon graft.

**Aim:** To study the morphology and morphometry of flexors of forearm.

**Materials and Method:** The cadaveric forearms were dissected and each muscle tendon was identified till the proximal margin of flexor retinaculum. Any variations and presence of accessory muscles were looked for. Detailed analysis was done and photographs were taken. The morphometric measurements such as the total length of forearm from medial epicondyle to the proximal margin of flexor retinaculum (A), length of the tendon from the proximal end of flexor retinaculum were measured (B). The length of the individual muscle was calculated by the difference between the total length of forearm and length of tendon (A-B)

**Result:** The study was done in 51 specimens of cadavers of forearm. The mean length of forearm (A) was 27.33cm, mean length of flexor carpi radialis tendon and muscle was 15.79cms and 11.54 cms, mean length of flexor digitorum superficialis tendon and muscle was 10.75cms and 16.58cms, mean length of Palmaris longus tendon and muscle was 14.86cms and 9.45, mean length of flexor carpi ulnaris tendon and muscle was 8.70cms and 18.63cms, mean length of flexor profundus tendon and muscle was 14.44cms and 12.90, tendon and mean length of flexor pollicis longus tendon and muscle was 14.05 and 13.28 respectively.

**Conclusion:** The morphometry of muscles of forearm has an important role in tendon graft and reconstructive surgeries. It also helps to outline the muscle belly for botulinum toxin as a therapy in paralysed patients.

## **Morphological Variation of Normal Adult Human Ear in East Indian Population**

**Rahul Rai**

**Purpose:** Knowledge of measurement of the external ear is important as variations exist based on gender, age and ethnicity. The present study is pertaining to the morphological variations in external ear for Eastern part of Uttar Pradesh.

**Material and Method:** Different parameters were measured in 300 adult students between the age group of 18-30 years

**Result:** The parameters were recorded and compared between the right and left side and comparison between the groups was also obtained.

**Conclusion:** The study will be applicable in screening for disease monitoring, surgery, forensic, industrial design ergonomics.

## A Morphologic & Morphometric Study of the Vermian Fossa and Internal Occipital Crest in Adult Indian Human Skulls

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**Background:** The inner surface of the squamous part of occipital bone shows a prominent internal occipital crest that descends and bifurcates close to foramen magnum to enclose a small depression called vermian fossa. It has been reported that the internal occipital crest and vermian fossa affect the dural venous sinuses close to it and also influence the cerebrospinal fluid flow. There is paucity of literature regarding the morphology and morphometry of internal occipital crest. Hence, the present study was undertaken.

**Aims and objectives:** To provide morphologic & morphometric data of the vermian fossa and internal occipital crest in Indian population

**Materials and methods:** This was a cross-sectional study of 64 normal dry adult human cranial bases and 4 occipital bones for a period of 3 months. All data was tabulated, analysed and summarized using mean and standard deviation.

**Results:** The vermian fossa was present in 56 bones and absent in 12 bones. The shape was predominantly type 1 variety and type 2 variety were the least observed shape. The internal occipital crest was sharp in 37(54.4%) bones, rounded in 24(35.3%) bones and wide in 6(8.8%) bones and absent in one bone. The mean length of the internal occipital crest from internal occipital protuberance to its bifurcation was  $2.83 \pm 0.73$  cm.

**Conclusion:** An accurate knowledge of morphology and morphometry of vermian fossa and internal occipital crest and their variations is of significance in diagnostic and therapeutic performance of clinicians and radiologists. Hence, this is of importance to anatomists and morphologists.

## Morphometric study of Neck and Neck Shaft Angle of Dry Femur

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**Background:** Mostly femoral fracture of upper end involving the neck and trochanters are common. The neck shaft angle, neck transverse and neck vertical diameter influence the fractures of proximal femur. Internal fixation and reduction of fracture of upper end of femur with implants to restore normal anatomy and functional activity of femur is necessary for early recovery of patients. The study was performed to enlighten the orthopedic surgeons and implant manufacturer about the geometry of upper end of femur.

**Objectives:** The objectives of present study to measure the neck shaft angle, neck transverse and vertical diameter.

**Material and Methods:** The present study was performed on 310 dry femora in the department of anatomy RKDF Medical College Hospital & Research Centre, Bhopal, Madhya Pradesh. The measurements were taken of neck shaft angle, neck transverse and vertical diameter of femur by using goniometer and vernier calipers. The mean value and range were calculated by using SPSS software.

**Results:** The mean neck shaft angle of right and left femora was  $126.04 \pm 4.9^\circ$  and  $127.43 \pm 5.2^\circ$  respectively and maximum range of right and left femora was  $135^\circ$  and  $136^\circ$  respectively. Neck transverse diameter of right and left femora was  $24.10 \pm 2.4\text{mm}$  and  $24.58 \pm 3.1\text{mm}$ , respectively. Neck vertical diameter of right and left femora was  $28.96 \pm 3.18\text{mm}$  and  $28.0 \pm 3.7\text{mm}$  respectively.

**Conclusion:** Right and left femoral measurements show no significant difference. The use of normal means and range of femoral dimensions helps to decide the plan and management of surgeries and manufacturer to develop appropriate implants suitable for the Indian population.

## Incidence of Hypoplastic Posterior Communicating Artery and Fetal Posterior Cerebral Artery in Andhra Population of India – A 3Tesla-MR Angiographic Study

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**Background:** The posterior communicating arteries (PCoA) are important component of collateral circulation between the anterior and posterior part of circle of Willis. The hypoplasia or aplasia of PCoA will reflect on prognosis of the neurological diseases.

**Aim and objectives:** Precise studies of the incidence of hypoplastic PCoA in Andhra Pradesh population of India are hitherto unreported, since the present study was undertaken.

**Material and methods:** Two hundred and thirty-one magnetic resonance angiography (MRA) images were analysed to identify the hypoplasia of PCoA and presence of fetal type of posterior cerebral artery (f-PCA) in patients with different neurological symptoms.

**Results:** All the patients underwent 3.0T MRI exposure. The results were statistically analysed. 63 (27.3%) PCoA hypoplasia and 13 cases with f-PCA (5.63%) cases were identified. The hypoplastic PCoA was noted more in males than females ( $p < 0.05$ ) and right-side hypoplasia was common than the left ( $p < 0.04$ ); bilateral hypoplasia of PCoA was seen in 37 cases out of 63 and is significant. The hypoplastic cases of the present study also were associated with variations of anterior cerebral arteries and one case was having vertebral artery hypoplasia.

**Conclusion:** Incidence of PCoA as unilateral or bilateral with other associated anomalies of circle of Willis is more prone to develop stroke, migraine and cognitive dysfunction. Knowledge of these variations in the PCoA plays a pivotal role in diagnoses of neurological disorders and in neurovascular surgeries and angiographic point of view.

## Four Headed Triceps: Brachii Muscle: A Case Report

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**Introduction:** Triceps brachii muscle is the only muscle of posterior compartment of arm, consisting of three heads—long, lateral and medial. Radial nerve and profundabrachii artery run in the radial groove that separate lateral and medial head. Evolutionarily, triceps has many sub heads which have either fused or disappeared. Therefore, the knowledge of muscle is essential anthropologically and clinically and this study aims to study the anatomical variations of triceps brachii muscle.

**Case description:** In the present study, 40 upper limbs from the Department of Anatomy, KalpanaChawala Govt. Medical College, Karnal were examined for the variations of triceps brachii muscle during routine dissections of undergraduate students. The variations found were neatly dissected and photographs taken wherever necessary. Out of 40 upper limbs dissected, only one specimen presented with variation of triceps muscle. The variation found was fourth head of origin of muscle seen in a male cadaver in the right arm. The variations present were seen only unilaterally in cadaver. The details of these variations will be discussed in the article.

**Discussion & Conclusion:** The variations of triceps brachii muscles are mentioned in literature, but are uncommon and if tendinous fourth head are present over the neurovascular bundles they may lead to compression syndrome. Hence, these variations are of great importance to the radiologists, surgeons and orthopedicians while dealing with posterior compartment of arm.

## Morphology & Morphometry of Foetal Corpus Callosum Using Mri –Retrospective Study

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**Aim & Objective:** To investigate the development of foetal corpus callosum by means of its length and width during 16 -32 weeks of gestational age. To determine the normal morphology of foetal corpus callosum and to correlate the growth of corpus callosum corresponding to the gestational age.

**Methods:** A retrospective MRI study was conducted in Radiology diagnosis department in Sri Ramachandra medical college and research institute. The study was conducted on 50 pregnant females with GA of 18-36 weeks and morphology of foetal corpus callosum were measured using MRI. The corpus callosum was visualized in a mid-sagittal plane as an anechoic structure, delimited by two echogenic lines superiorly by sulcus of the corpus callosum and inferiorly by the septum pellucidum. The length of corpus callosum was measured from the most anterior aspects of genu to the most posterior aspect of the splenium. The values obtained from the study were statically calculated using regression coefficient method.

**Results:** The mean length of corpus callosum was between 18 to 22 weeks ( $25 \pm 1.7$  mm) and the length of CC between 23-25 weeks of GA ( $30 \pm 1.5$ ) between 26-30 of GA ( $38 \pm 2.3$ ) and between GA 31-36 ( $44 \pm 2.4$ ). Regression co-efficient analysis between length of corpus callosum and gestational age shows ( $Y = - 8.72 + 1.51 X$ ) age (in weeks). Where Y= length of foetal CC and X= gestational age.

**Conclusion:** The present study found that the length of foetal corpus callosum increased by an average of 1.5mm per week of gestation age.

## A Morphological Study of Ossified Carotico-Clinoid Ligaments and its Clinical Implications

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**Background:** Knowledge of morphological structure such as anterior clinoid process and the middle clinoid process is essential during the surgical approach of the cavernous sinus and internal carotid artery. In addition, osseous variations such as ossified interclinoid and caroticoclinoid ligaments are significant in clinical practice because they can produce various neurological disturbances or block the passage of an internal carotid artery which changes its direction and runs medially out of the cavernous sinus through the osseous bar.

**Aims and objectives:** The aim of the present study was to evaluate the incidence and morphology of the ossified caroticoclinoid ligament.

**Materials and methods:** 56 dry unknown skull bones were studied from the department of anatomy, Sri Siddhartha Medical College, Tumakuru, Karnataka, India. The incidence of partial or complete and unilateral or bilateral ossification of caroticoclinoid ligaments (CCL) were observed and photographed.

**Results:** In the present study, the incidence of the ossified caroticoclinoid ligament (CCL) was observed in 38 (33.93%) sides of skulls. The incidence of complete ossification of the caroticoclinoid ligament (CCL) was observed in 9 (16.07%) skulls (unilateral-5 and bilateral-4). Incomplete ossification of the caroticoclinoid ligament (CCL) was found in 17 (30.35%) skulls (unilateral- 9 and bilateral-8).

**Conclusion:** A potential risk for compression of the internal carotid artery is due to ossification of the caroticoclinoid ligament. Hence, a detailed anatomical and morphometric knowledge of the region is necessary to perform the successful surgeries. The aim of the present study was to evaluate the incidence of the ossified caroticoclinoid ligament in and to discuss its clinical relevance.

## Incidence of bipartite zygomatic in East Indian population

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**Background:** Zygomatic is a very important facial bone for both cosmetic and functional aspect. Sometimes the zygomatic bone is divided horizontally by a suture line into a larger upper and smaller lower part. This Variation is known as the bipartite zygomatic. Knowledge regarding the contour of zygomatic bone is very important for management of facial bone injuries.

**Aims and Objectives:** Our aim is to report the frequency of the morphological variation of the malar bone in East Indian population.

**Materials and methods:** An observational, descriptive type of study on morphological variations on sutures of zygomatic bone was done on 143 dry human adult skull of Anatomy museum of Medical Colleges of West Bengal.

**Result:** Three skull showed this extra suture line on the zygomatic bone bilaterally.

**Conclusion:** Careful observation as well as knowledge of such sutural variations of the facial bone is very important for cosmetic surgeons during intervention.

## **A Study on Needs Assessment to Design Clinical Anatomy Instruction Module for I Year Medical Students During Early Clinical Exposure in Competency Based Medical Education**

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**Background:** The medical students are more focussed towards their summative assessments and the curriculum is also designed in such a way that the students are exposed to the theory as well as practical classes of basic sciences involving discipline based didactic lectures. It is teacher centered and examination oriented with emphasis on memorization of facts and figures. Hence, there is neither the scope for correlating the knowledge of basic sciences with clinical experience nor do they become familiar with the hospital environment during the first year of MBBS. **Aim & Objectives:** To facilitate the 1<sup>st</sup> MBBS students' transition to the clinical phase by clinical anatomy instruction module designed depending on the need assessment.

**Materials and Methods:** The need assessment was done with convenient sampling of participants including students from 2<sup>nd</sup> MBBS to interns and clinical subject teaching faculty with separate structured, validated questionnaire for students and faculty from various institutions from Tamilnadu and other states. The questionnaire was administered online by Google form.

**Results:** The overall feedbacks from students and faculty showed that clinical anatomy instruction module is necessary to increase the knowledge of surface anatomy, radiology and embryology topics oriented to clinical aspects.

**Conclusion:** Needs assessment done with students and faculty indicates the possible intervention and the need of clinical anatomy instruction module during the early clinical exposure of 1<sup>st</sup> MBBS in competency based medical education.

## Knowledge and Awareness on Ethical Issues in the Storage and Reuse of Human Biological Samples in Biomedical Research in the Research Institutions

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**Background:** As emerging innovations in the fields of genetics, genomics and biotechnology increase, the value of biological samples and data creates greater demand that will lead to increased exportation of biological samples and data for technologically advanced biomedical research. Many countries have regulations and guidelines that guide the use and exportation of stored biological samples and data.

**Aim & Objectives:** To create knowledge and awareness on ethical issues in the storage and reuse of human biological samples among the researchers.

**Materials and Methods:** The study was designed as mixed method, with convenient sampling of 45 participants from the research institutions of VMRF (DU) by dividing into 3 groups, Group A – 15 researchers, Group B – 15 research supervisors and Group C – 15 ethical Committee members and all had undergone a training workshop with a detailed presentation on the ethical guidelines from ICMR. The Retro – pre questionnaire analysis was done using a 5 point Likert scale and analyzed by one Way ANOVA to find out the significance among the 3 groups after the presentation.

**Results:** The overall increase in knowledge, attitude and skills domain after the workshop was statistically significant in all the groups. The researchers were aware that ethical committee plays a key role in oversight and use of the bio-data repositories for research.

**Conclusion:** Various ethical issues arising in the storage reuse and exportation of biological samples and data has to be sensitized to researchers. Further recommendations on IPR, data mining, data hacking, data accuracy & security has to be recommended to researchers.

## **A Bilateral variant Accessory Belly of Extensor Indicis Muscle in Posterior Compartment of Forearm: An Anatomical Variation.**

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**Introduction:** The extensor indicis (EI) muscle is one of the known deep extensors of forearm, which lies medial and parallel to extensor pollicis longus. Numerous variations of the extensor muscles generally encountered during surgical and dissection procedures are reported. These kinds of variations are important for Hand surgeons to plan surgical procedures during muscle graft and tendon transplantation procedures and for diagnosis of clinical syndromes like extensor indicis proprius syndrome.

**Case report:** During routine dissection of teaching for phase I undergraduate medical students in AIIMS Bibinagar, we found an anomalous additional belly of Extensor Indicis (EI) muscle bilaterally in an adult male cadaver of around 70 years of age. Both the additional belly's of right and left forearm originated from the main belly of EI, presented with two tendon slips passing through the fourth compartment of the extensor retinaculum, on the right forearm one of these tendinous slips is inserted into ulnar aspect of the dorsal digital expansion of the middle finger, the other slip was merged into the dorsum of the hand and on the left forearm one of the tendinous slip was insertion into the dorsal part of capsule of the metacarpophalangeal joint of the middle finger and the other tendinous slip merged into the dorsal digital expansion of middle finger. Both additional bellies were supplied by posterior interosseous nerve.

**Discussion:** The extensors of forearm are known to exhibit wide range of variations. Among the extensors, the extensor indicis is well known to associate with the variation of its muscle belly and with tendon and its insertions. It results in extensor indicis proprius syndrome.

**Conclusion:** Knowledge of anatomical variations of forearm muscles is important because they have implications for reconstructive surgery like tendon transfers in response to functional loss of other forearm muscle.

## Spatial Relationship of Coronary Sinus with coronary arteries and its branches – corrosion cast study

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**Background:** Coronary sinus is the major venous trunk used as a conduit for performing various electrophysiological and interventional cardiac procedures. It is located on the diaphragmatic surface of heart in the posterior part of left coronary sulcus where it is in close spatial relationship with coronary arteries and its branches. Knowledge about the adjacent anatomical structures like arteries is of great significance to perform safe and proper interventional procedures.

**Aims and objectives:** To study the spatial relationship of coronary sinus with coronary arteries & its branches using corrosion casts technique.

**Materials and methods:** In this study, heart casts were prepared using polyurethane foam by corrosion cast technique from 104 fresh human hearts of both sexes aged above 20 years obtained after autopsy. The position of coronary sinus with the adjacent coronary arteries were noted and analysed.

**Results:** In the present study coronary sinus exhibits a spatial relationship with circumflex branch of left coronary artery and the right coronary artery. The coronary sinus was commonly found to lie superior and superficial to right coronary artery and its branches which constituted around 68 %.

**Conclusion:** Knowledge about these varied relationships between coronary sinus with adjacent arteries is of practical importance during vascular surgery and cardiac interventional procedures which are carried via coronary sinus to avoid fatal injuries to these vessels.

## Assessing DNA Damage in the Developing Tissues of Chick Embryo on Exposure to Cell Phone Radiation Using Alkaline Comet Assay

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**Background:** Cell phones have become an indispensable part of our daily life. The scientific community is yet to come with a conclusive report regarding the possible health effects due to cell phone radiation exposure. The present study is undertaken to analyse the basic mechanisms by which radiofrequency (RF) fields interact with developing tissues of chick embryo.

**Aims & objectives:** Our study is designed to assess the possible DNA damage in developing brain, eyes and liver of chick embryo following chronic exposure to ultra-high frequency / radiofrequency radiation (UHF/RFR) emitted from 2G & 3G cell phone.

**Materials & methods:** Fertilized chick embryos were incubated in three groups. Group A- experimental group exposed to 2G radiation (24 eggs), Group B- experimental group exposed to 3G radiation (24 eggs) and Group C- sham exposed control group (24 eggs). On completion of scheduled duration of exposure, the embryos were sacrificed, and the brain, eyes and liver were dissected out. The collected tissues were then subjected to alkaline comet assay technique to assess the DNA damage. The results were statistically compared using one-way ANOVA.

**Results:** In our study, the exposure of chick embryo to 2G and 3G cell phone radiation caused increased mean comet length, mean tail length, mean % of DNA in the tail and mean tail moment suggestive of increased DNA damage.

**Conclusion:** Our study concludes that the RFR exposure caused significant increase in DNA damage in developing brain, eyes and liver of chick embryos with changes more pronounced in 3G exposure group.

## A Case study of Praderwilli Syndrome

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**Introduction:** PraderWilli syndrome (PWS) was first described by Prader et al. in 1956. It is a syndromic form of neurodevelopmental disorder and the most common congenital imprinting disease. Incidence is about 1 in 15,000–25,000 live births.

**Case description:** An eighteen-year-old girl born to non-consanguineous couple presented to the genetic clinic with primary amenorrhea, increased appetite, obesity and short stature. On detailed history it was noted that there was poor feeding at birth, delayed motor milestones, sluggish speech with borderline intelligence & increased weight gain from 5 years of age. On examination, she had facial phenotypic features of PWS like narrow bi frontal diameter, almond shaped eyes, and narrow nasal bridge. Ultra sonography of abdomen revealed small ovaries and infantile uterus. Chromosome analysis of peripheral blood was done and was found 46XX. Fluorescence in situ hybridization (FISH) performed on chromosomes showed deletion on chromosome 15 on q11.23 region which confirmed the case as praderwilli syndrome.

**Discussion:** There are three main genetic mechanisms that result in PWS: paternal 15q11-q13 deletion, maternal uniparental disomy (UPD) 15, and imprinting defects (ID). The most important complications of PWS are related to the cardiovascular and respiratory involvement caused by obesity which are directly responsible for the high incidence of death in children and adults with PWS. Behavioural problems and psychiatric manifestations are also common complications

**Conclusion:** Management requires multidisciplinary care team that includes therapeutic interventions to manage growth, regular exercises, dietary management, occupational speech therapy and behavioral therapy.

## Hand Washing Practices Among the Higher Secondary School Student's in Wayanad District

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**Background:** Diarrhea and Acute respiratory tract infection are most common cause of morbidity and mortality among school going children which can be prevented by Hand washing that is seldom practiced despite its life saving potential. So, aim of the present study is to know the Knowledge, attitude and practices related to Hand washing among students of 8th to 10th standard.

**Aims and objectives:** To study the Knowledge, attitude and practices about hand hygiene and oral hygiene practices among the higher secondary school children's in Meppadi of Wayanad district.

**Materials and methods:** This Cross-sectional study was conducted in the Government Higher Secondary School, Meppadi after getting permission from the Principal. The study group included 523 students between class 8th to 10th Standard. The data was collected by Self-administered Questionnaire to study Knowledge about hand and oral hygiene among School childrens. The attitude and practice were assessed directly by trained 1st year MBBS volunteers.

**Results:** Out of 523 Students, 63.47% brushed their teeth twice daily, 68.45% washed their hand before eating and 84 % washed their hand after using the toilet. Among these students 4.58% washed hand with soap always while 37.66% washed their hands in soap most of the time. But 53.34% students washed their hands for only 10-15 seconds.

**Conclusion:** In this study even though most of the students washed their hands with water but all of them did not use soap always. Most of the students did not follow proper duration or techniques of hand washing. So, there is a need for educating these children about proper hand washing using trained MBBS volunteers.

## An Intelligence System to Identify Number Cells in H& E Stained Slides

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**Background:** Routinely tissues are studied under the microscope after staining with H (haematoxylin) and E (eosin). Haematoxylin is a basic dye which has tendency to stain acidic components of the cell. Eosin is an acidic stain which binds with basic components of the cell. This is the principal behind the H&E stain. The cell membrane and cytoplasm will be stained pink whereas nucleus is stained purple. Number of nuclei present indicates number of cells in the slide. There are various methods to do cell counts like manual, automatic etc.

**Aims and objectives:** To deduce number of cells present in the slide using image processing so that cell counting becomes easier and more sophisticated in histology, Histopathology & oncology. The system is trained mainly to identify cell membrane, cytoplasm and nucleus based the staining properties.

**Materials and methods:** The image of H& E stained slide is used, processed using matlab (image processing) tool.

**Results:** The image of H&E stained slides is given as input to the pre trained system. The system is designed in such a way that when it gets the image the image is processed to two sub images are generated in which one is pink stained and another is purple stained. Then the number nucleus in the purple stained image is identified thus able to identify number cells as well.

**Conclusion:** Basically, this system differentiates pink stained and purple stained cells and then the count of cells is identified. This eases the process of cell count in H & E stained cells.

## A Rare Cause of ECG Alteration- Bilateral Rectus Sternalis: An Incidental Finding in a Cadaver with Pacemaker-Case Study

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**Introduction:** Rectus Sternalis is an uncommon accessory muscle of the anterior thoracic wall. Despite its rarity, health care providers should be aware about this variation to avoid unnecessary interventions and complications.

**Case description:** Bilateral rectus sternalis muscle was observed superficial to pectoral fascia in an adult male cadaver of Indian origin during routine anatomical dissection done in CMC Vellore. Inferior fleshy belly of the muscle was attached to external oblique aponeurosis and superiorly, it was tendinous, joined with the other side opposite to manubrium sterni. Then the tendinous part bifurcated and was continuous with the sternocleidomastoid muscle of corresponding side. The pectoral nerve innervated the muscle. Pulse generator of the subcutaneous pacemaker was observed in the left infra clavicular region of the cadaver. The lead was traced through left subclavian vein, left brachiocephalic vein, superior venacava, right atrium till the right ventricle.

**Discussion:** Rectus sternalis can be mistaken for a tumour or recurrence of carcinoma breast. It can be used as flap for reconstructive surgery of breast, head and neck region, if identified. The muscle has been associated with deficiency of pectoralis major, reno-vascular anomalies, anencephaly, and alteration in ECG.

**Conclusion:** In this case, the history of the patient was not known. If the ECG changes did not change even after pacemaker implantation, this muscle can be considered and necessary workup to rule out the presence of rectus sternalis can be done.

## Setting of Genetic Laboratory in Department of Anatomy: An Experience

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**Background and Aim:** The Department of Anatomy in India and other countries is emerging as one of the choices for establishing genetic lab for diagnostic and research purposes. The academic value of “hands-on experience” in genetic laboratory remains the mainstay of these labs for research purposes. Efforts are needed to improve the facility available for research purposes. This new development could improve research options in Anatomy.

**Material and Methods:** Authors brought basic low budget instruments through tendering and local purchase. Thereafter the consumables and reagents were procured through intramural grant. Then the author started collaborative projects. This ensured continuous flow of samples to the lab from other participating departments. In this endeavour, considerable support was also provided by the department as well as the administration of the institute.

**Observations:** The efforts made by the department has resulted in an extremely improved scenario in terms of availability of setup for DNA isolation, amplification of region of DNA by PCR, visualization of amplified product of DNA in transilluminator, teaching and inter-departmental activities. Till date the lab has tested 78 samples.

**Conclusions:** We believe that a lot of work is needed to encourage setting of genetic laboratory in the department of anatomy. It requires intense encouraging attitude of the colleagues and due support of staff for the same. The authors are hopeful that this will add to more quality research works in the field of genetics from the department.

# Simulation Based Module for Teaching Anatomy of Musculoskeletal System for First Year Medical Students

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**Background:** Cadaver dissection has been considered as the best way of teaching and learning a basic subject like Anatomy which is a Foundation stone in Medical science, but due to inavailability of Cadaver and with the advancement in technology, Simulators like virtual Anatomy dissection table provides the scope to explore and learn Human Anatomy. Simulation based teaching through virtual Anatomy dissection table enhances the understanding, allows for exploration and learning of human anatomy beyond what any cadaver could offer.

**Aims and Objectives:** To create a module in anatomy which could be included in the curriculum. To assess the perception of students and staffs regarding simulation based teaching. **Materials and Methods:** Brainstorming session, Lesson plan and SLO were created and validated by subject experts. A Teaching –Learning module using virtual dissection table for 150 first year MBBS students was created. A regular theory class was taken for students on Joints by assigned teacher, students were divided into 2 groups, same topic was taught to one group (A) on cadaver in dissection hall and to second group (B) through simulation based module using virtual Anatomy table. For the next topic the teaching method for the groups was reversed. Student Assessment - a pre and post-test questionnaire and feedback on overall utility of the table from both students and staff were taken. Statistical analysis was done.

**Results:** Students performed better in post-tests after being taught on virtual table as compared to only dissection hall. The module developed for Musculoskeletal system was appreciated by faculty and students. 51% of students and 64.3% of teachers believed Simulation teaching helped them to understand anatomy better.

**Conclusion:** Students and Faculty accepted the fact that simulation fosters effective learning through active engagement and repetitive practice.

## Awareness About Yoga Asana and Its Benefits Among Under Graduate Medical Students: A Descriptive Study

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**Background:** India has a vast diversity of Yoga practices, which can be traced back as early as past 5000 years when Ayurveda was being practiced. In spite of India being the birth place of "Yoga", the benefits of Yoga have not reached each and every one of us. The reason could be lack of awareness, interest and misconceptions about the practice of Yoga.

**Aim:** This study aims to know the extent of awareness of Yoga Asana among the undergraduate medical students and its benefits towards ensuring physical, mental, psychological and spiritual well-being.

**Materials & Methods:** It was a descriptive cross-sectional study conducted among undergraduate medical students of ShriSathyaSai Medical College and Research Institute for a period of 2 months. Universal sampling method was employed.

**Sample Size:** Based on the study conducted in Mangalore among pre-clinical medical students, a prevalence of 50% was observed with regard to knowledge and benefits about Yoga. Taking that into account, sample size will be:  $N = 4pq / L^2 = 4 \times 50 \times 50 / 8 \times 8 = 123.45 = 156.25$  (approximately 150).

**Inclusion and Exclusion criteria:** 150, 1 year under graduate students of ShriSathyaSai Medical College were included. Unwilling students will be excluded. A close ended questionnaire was used to collect the data regarding awareness and benefits of yoga. A pre designed and pre tested proforma was used to collect data about the participants knowledge about the awareness and benefits of Yoga. Data analysis were done using SPSS version 26 of 2019 and excel 2007 software.

**Implications:** Considering the fact that the medical students are more prone for stress during their curricular training, knowledge and awareness about Yoga Asana can play an immensely significant role. Further, based on the study findings, a sensitization program about YOGA may be planned for the benefit of the students.

## A Case Study of Apparently Balanced Chromosomal Translocation

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**Introduction:** Recurrent abortions is one of the most common complications of pregnancy. The cause being multifactorial. Parental chromosomal rearrangement was first proposed as one of the causes.

**Case Description:** A couple with bad obstetric history revealed normal karyotype for male and female partner karyotype revealed balanced reciprocal translocation between chromosome 11 and 22 - 46, XX, t (11;22) (q25; q13). Pedigree uncovered similar history and translocation pattern in both mother and sister. They were phenotypically normal. USG Abdomen report of female was normal. Hormonal assay of the couple showed no significant values.

**Discussion:** The most common cause of spontaneous abortion in the first trimester (50%) is chromosomal abnormalities. The majority of chromosomal anomalies (95%) are numerical. On the other hand, half of the structural abnormalities may be inherited from a parent who is carrying a balanced chromosomal translocation that is at a higher risk of having children with chromosomal abnormalities. Reports show the risk of miscarriages is increased where one of the couple has such balanced rearrangement of the normally fertilized embryo 20% were abnormal segregation of the translocation. Most abnormal embryos would fail to establish a pregnancy. The present study revealed unique balanced translocation in female carrier with reproductive failure.

**Conclusion:** Cytogenetic analysis, therefore, should be mandatory for all the couples with reproductive failures. Screening out of the embryos with an unbalanced product of the Robertsonian translocation prior to birth would be expected to increase the chance of a successful pregnancy. Adequate genetic counselling with other assisted reproductive techniques would be the need of the hour.

## Immunohistochemical study of oxidative stress in placentae of gestational diabetes mellitus

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**Background:** Gestational diabetes mellitus (GDM) is associated with derangement of hormones, metabolites, and growth factors in maternal and fetal circulation which may influence the development and function of the placenta.

**Aim and objectives:** The aim of this study is to compare oxidative stress (OS) using antioxidant system markers in GDM patients and control subjects to determine the relationship between OS and GDM.

**Material and methods:** The study comprised 60 placentas (30 each from control and GDM respectively). All the placental samples were evaluated for the OS status using immunohistochemical markers, SOD, GPX (antioxidant enzyme marker) and 8-OHdG (oxidative DNA damage marker). The data were analysed statistically using unpaired Student T-test.

**Results:** The immunohistochemical (IHC) stained slides showed moderate positivity (score 1+) of SOD & GPX but high positivity (score 3+) of 8-OHdG was observed in GDM than control ( $p < 0.0001$ ). All the markers expressed a stronger DAB reactivity in blood cells of fetal blood vessels and blood cells of intervillous (IV) (score 2+) ( $p < 0.0001$ ). In control it was placid in placental villi (either score 1+ or 0) positivity in intervillous space blood cells and negative in fetal blood cells (score 0).

**Conclusion:** From the present study, we conclude that oxidative stress occurs in Gestational Diabetes and antioxidant defense mechanisms are inadequate. IHC analysis in the levels of SOD, GPX and 8-OHdG are higher in GDM compared to control pregnancies and may be useful markers in GDM in controlling the diabetic milieu.

## **Prevention, Preparation and Precaution of COVID-19 Taken by People of Sitapur District.**

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**Introduction:** A survey of awareness, perception and management of COVID-19 were done on people of Sitapur district of Uttar Pradesh, India. Few questions related to COVID-19 were asked to each participant. The data were collected analyzed and presented statistically.

**Aim:** The aim of this study was to find the prevention, preparation and precaution of COVID-19 taken by the people of Sitapur district of Uttar Pradesh.

**Materials and Methods:** This cross-sectional study was conducted on 200 people with irrespective of sex and age. The participants were asked questionnaires verbally. The study was conducted in two months. The sample size of 200 participants was collected by simple random sampling.

**Results:** In this study we found that 27% of people were not taking any prevention to control COVID-19. It was also found that 70% of people had no planning of management of COVID-19 infections. But more than 80% of people were taking precaution to avoid infection of COVID-19.

**Conclusion:** People were not bothering about prevention and preparation of COVID-19, whereas most of them were taking precaution.

## **A Case Report of Giant Papilloma on the Back of the Knee Joint.**

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Papilloma is a benign tumor projecting above the surface of the skin. It grows from the epithelial tissue; develops as finger like fronds. Human contact with human papilloma virus (HPV) is one of the substantial causes for its occurrence. It feels rubbery and semisolid in consistency. They are slow growing and long-lasting common tumors seen in various regions of the body like skin, breast, cervix, conjunctiva, etc. Its location on exposed parts of the body like, around the face, neck, limbs, etc. causing much discomfort. Its location in certain areas of the body is having greater cosmetic importance. Hence most of them prefers an early medical and surgical intervention to restore the cosmetic profile of the body to avoid growing physio-psychological discomforts. Clinical resemblance of many such swellings may requires a meticulous examination and evaluation to differentiate it from other commonly seen external growth from the body surface; like sebaceous cyst, dermoid cyst, wart, hemangioma, neurofibroma, etc. One such clinical rare case of unusually large papilloma in an elderly lady aged about 65 years was presented with a swelling in her left popliteal region was excised under local anesthesia, will be presented along with discussions.

## Effects of The Prior Histology Knowledge in the Learning of Histopathology Slides of Mbbs Phase Ii Students

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**Background:** The traditional undergraduate curriculum concentrated on the basic sciences in the first year. Teaching of histopathology is the gateway for the integration of basic sciences and clinical disciplines. An integrated curriculum would help to better understand the application of the basic sciences in clinical medicine. Teaching of histopathology in second year complement the understanding of the pathogenic mechanisms of diseases related to various systems.

**Aims and objectives:** To assess effectiveness of small group teaching in histopathology lab with vertical integration in MBBS Phase II students. To assess the effects of perception of students after small group teaching.

**Materials and methods:** An Educational interventional study was done on 70 of MBBS Phase II students attending Histopathology Lab for practical classes; 7 slides belonging to various chapters were taught histology followed by histopathology. Data analysis of control group was compared with interventional groups using Kruskal Wallis test, Mann Whitney U test.

**Results:** Data analysis showed p value < 0.05 in 7 interventions by Kruskal wallis test. Intervention and retention in between the groups was assessed by Mann Whitney U tests - significant. Perceptions of students were significant for CBME method of teaching.

**Conclusion:** Vertical integration in the histopathology was significant towards the CBME method of teaching and learning with the p value <0.05. Perceptions also favored the vertical integration and retention too. Students must realize that histopathology integrates all the basic sciences, is basis for all clinical sciences. It provides skills needed to formulate a differential diagnosis.

## Understanding the Best Practices of Professionalism among Medical Residents and Faculties

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**Need for The Study:** Concept of professionalism involves set of attitudes and behaviours that one has towards his profession. By adding medical professionalism as a part of curriculum students will be encouraged to develop a sense of responsibility to build their team working skills. In addition to the formal curriculum, students also learn from their experiences by observing their teacher which is considered as hidden curriculum. There is a gap of uncertainty regarding the dimensions of professionalism that has to be included in the curriculum and how the concept of professionalism has been perceived by the undergraduate and postgraduate students.

**Objective of The Study:** To identify bestpractices of professionalism among undergraduate and postgraduate students and teachers of a medical college in order to have an insight whether there is a need for strategies for promoting professionalism in medical education.

**Methodology:** This Cross-sectional study comprised of medical interns, postgraduates and teaching faculty members of Yenepoya Medical College. The students and faculty will be asked to fill a structured questionnaire form after obtaining the informed consent. Questionnaire included scenariosdirected towards the selected salient attributes of professionalism like altruism, honesty, integrity and accountability. Each question will be designed in a likert scale pattern.

**Results:** According to the present study on practices of attributes of professionalism the greater score were obtained for accountability and equity among the study participants. Honesty received less score compared to other attributes. Details will be discussed at the time of presentation.

**Conclusion:** Following aspects regarding professionalism like altruism, honesty, accountability can be considered in training and assessment so that students can develop as dedicated practitioners and deal with medical errors honestly.

## Histological Analysis of coronary atherosclerosis: A Cadaveric study

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**Background:** Coronary artery disease due to atherosclerosis is an epidemic in India which is the leading cause of mortality worldwide and is responsible for one-third of all deaths.

**Aims and objectives:** The present study was undertaken, to determine the prevalence of atherosclerotic hearts without history of cardiac disease and to determine plaque location in coronary arterial system.

**Materials and Methods:** This study was done in the Department of Anatomy and Forensic Medicine, KGMU Lucknow UP, India in 50 adult human hearts which had no history of cardiac disease. The hearts were then dissected, and 300 sections were taken from origin, bifurcation & from distal end of right and left coronary arteries. These tissues were undergone in whole histological slide preparation technique and finally observed under microscope to note atherosclerosis.

**Results:** In present study out of 50 cases 40 (80%) had atherosclerosis. Total 300 segments were evaluated which include proximal, division and distal segments. Majority of atherosclerosis was present at division (18.6%) which is statically significant.

**Conclusion:** The proportion and Grade of atherosclerosis are significantly higher at division in hearts without history of cardiac disease. The identification of high-risk zones for atherosclerosis will lead to future advances to locally oriented preventive strategies.

## Perceived stress among Undergraduate medical students during COVID 19 pandemic.

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**Background:** The novel corona virus emerged in late December 2019; it rapidly spread to affect nearly all countries round the world, causing disruption in various socioeconomic and educational activities. The unusually prevailing circumstances may have an impact on undergraduate medical students in form of stress.

**Aims and objective:** To assess perceived stress among undergraduate medical students.

**Materials and Methods:** This cross-sectional study was done among undergraduate medical students of Government Medical College, Haldwani in August 2020. The online questionnaire was provided to undergraduate medical students across four professional, involved ten questions with maximum score of 40 based on Perceived Stress Scale; three categories of mild (0-13), moderate(14-26) and severe stress(27-40) was made. The statistical analysis included calculation of mean age, Pearson correlation, p value and chi-square test.

**Results:** This study involves a total of 242 students, with mean age of 21.04 years. The male were 105, females were 135. The mean PSS was 21.78, with 5.78 % (14/242) having Low perceived stress, 74.38% (180/242) having moderate perceived stress, 19.83% (48/242) having high perceived stress. Among females, 2.9% (4/135) having low perceived stress, 74.81%(101/135)having moderate perceived stress, 22.22%(30/135)having high perceived stress, among males, 9.5%(10/105) having low perceived stress, 73.33%(77/105) having moderate perceived stress, 17.14%(18/105)having high perceived stress, the association of gender and professional year with degree of perceived stress was not significant.

**Conclusion:** This study reflects that nearly 95% undergraduate medical students have moderate to high perceived stress during ongoing COVID 19 pandemic. The high level of perceived stress may markedly affect student's performance and can have bearing on mental health.

## Comet Assay – A Comprehensive Tool to Detect DNA Damage – Our Experience

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**Background:** The underlying bio-molecular events in the pathogenesis of most of the life-threatening diseases like cancer and degenerative diseases are the increase in the DNA damage and ineffective repair mechanisms. The DNA damage can be either exogenous or endogenous in origin. Increase in reactive oxygen species due to the imbalance between the oxidants and antioxidants, mainly accounts for the endogenously derived attacks on DNA. Though various methods are employed in the estimation of DNA damage, Single Cell Gel Electrophoresis (Alkaline comet assay) is proven to be a relatively simple, efficient and a versatile tool in the assessment of DNA damage and the efficacy of DNA repair mechanism.

**Aims and Objectives:** The aim of this study is to review and analyze the clinical application of comet assay in the field of medicine towards human biomonitoring.

**Materials and Methods:** Comet Assay was carried out in various study population and its efficacy was analyzed.

**Results:** In our experience, we observed that a standardized protocol and analysis system of various variants of comet assay in diverse types of cells, across the labs will be a useful and reliable clinical tool in the field of Medicine for the estimation of levels of DNA damage and repair mechanisms. In addition, a combination of comet assay together with an oxidative DNA damage biomarker will be an effective adjuvant to existing assay in detection of DNA damage. Conclusion: The extent of DNA damage measured by COMET assay can be used as a potential biomarker along with the specific bio-chemical parameters for early detection of the morbidity of chronic disease.

## The Role of Fluoxetine Therapy in Changing the Plasma Levels of 8-Iso-Prostaglandin F<sub>2</sub> (8-Iso-PGF<sub>2</sub>) in Patients with Major Depression

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**Background:** Major depression, one of the varieties of psychiatric disorder, can be identified by disruption of mood-adjustments, behavioural activities and presence of low esteem lasting for atleast two weeks. The etiological factors responsible for progression of the disease result in oxidative stress. Oxidative stress causes peroxidation of lipids and 8-iso prostaglandins F<sub>2</sub> (8-iso-PGF<sub>2</sub>) is an important metabolite produced as a result of lipid peroxidation. Fluoxetine is the drug used in the treatment of major depression.

**Aims and objectives:** To estimate the oxidative stress by analyzing plasma 8-iso-PGF<sub>2</sub> levels in newly diagnosed drug-naive cases and after fluoxetine course for eight-weeks.

**Materials and methods:** The study group consisted of eighty (80) drug naïve new major depression patients belonging to 18-50 years age. Estimation of 8-iso-PGF<sub>2</sub> was done using the plasma, in the Department of Biochemistry utilizing 8-iso-PGF<sub>2</sub> ELISA kit of Bioassay Technology Laboratory.

**Results:** The mean value of plasma 8-iso-PGF<sub>2</sub> levels for cases before the treatment ( $20.013 \pm 7.484$ ) was more as compared to the median value of plasma 8-iso-PGF<sub>2</sub> levels for cases after the treatment [4.599 (6.828)].

**Conclusion:** The levels of plasma 8-iso-PGF<sub>2</sub> among the major depression patients were reduced after completion of eight-week fluoxetine therapy.

## Clinico-Anatomical Appraisal of Floating Gall Bladder: A Case Report

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**Introduction:** Gall bladder is a pear-shaped organ normally located in its fossa on the inferior surface of the right lobe of liver and plays an important role in storage, concentration and ejection of bile. Various positional anomalies of gall bladder have been reported from either cadaveric dissections and autopsies or surgical and radiological procedures.

**Case Description:** During the routine dissection of abdomen region for under-graduate teaching in the department of Anatomy, Lady Hardinge Medical College, New Delhi; a floating gall bladder suspended by a long fold of mesentery was observed in a 65 year old male cadaver. Discussion: Awareness of positional anomalies such as a floating gall bladder is indispensable for surgeons to avoid disastrous consequences while performing hepato-biliary surgeries, especially cholecystectomies (laparoscopic and open). This knowledge proves beneficial even for radiologists and clinicians in accurately aiding numerous diagnostic and therapeutic procedures concerning the same.

**Conclusion:** This case report highlights the significance of acquaintance with a rare positional anomaly of gall bladder in efficient multi-disciplinary management of hepato-biliary disorders.

## Artificial Intelligence in Cytogenetics

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**Introduction:** Artificial intelligence refers to the simulation of human intelligence in machines that are programmed to think like humans and mimic their actions. Cytogenetics is the study of the structure and function of chromosomes, undertaken for looking at constitutional abnormalities like birth defects, sexual disorders etc. and acquired abnormalities like malignancies. Karyotyping is the process by which photographs of chromosomes are taken in order to determine the chromosome complement of an individual. Molecular cytogenetics, namely fluorescence in situ hybridization, or FISH, involves studying chromosomes-their number or structural defect using the basic principle of complementary base pairing nature of the DNA. There has been an evolution of these processes from the manual to an automated process in karyotyping and studying chromosomal abnormalities, with the advent of technology and science.

**Discussion:** The process of transition from manual to automated karyotyping is being discussed.

**Conclusion:** Automated detection and classification of banded chromosomes will help the laboratories to generate the reports faster and more accurately. This will help the clinicians diagnose cancers and other genetic disorders at an early stage more efficiently and accurately. The patient management takes a new turn in prediction as well as prevention.

## Genotoxic and cytotoxic events in exfoliated buccal epithelial cells among students exposed to formaldehyde during cadaveric dissection.

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**Background:** First year MBBS students, during their routine dissection schedule endure to an extensive exposure to formaldehyde which is a toxic agent.

**Aims & Objective:** To evaluate the extent of genotoxicity and cytotoxicity caused due to exposure of formaldehyde.

**Materials & Methods:** Hundred first year MBBS students exposed to formaldehyde (FA) during their routine dissection hours were employed in this study and symptoms caused due to exposure of formaldehyde was analysed. Thirty students among the hundred, who didn't have recent history of X-ray exposure, medications, smoking and alcohol consumption were selected for Buccal Micronucleus Cytome (BMCyt) assay which was performed pre and post exposure to formalin or formalin embalmed cadavers.

**Results:** The frequency of genotoxic and cytotoxic end markers (micronuclei, nuclear buds, binucleated cells, karyorrhectic cells, pyknotic cells, and karyolytic cells) were higher in subjects during post exposure compared to pre exposure. All these parameters were increased significantly ( $p < 0.001$ ) which represented chromosomal damage, nuclear disintegration and increased cell death.

**Conclusion:** Exposure to FA causes a higher risk for health-related symptoms and genomic damage. The air contaminated with FA may result in problems such as coughing, wheezing and irritation of the eyes, throat, and nasal cavities. First year medical students are exposed to FA during their course of study and an elevated frequency of genotoxic and cytotoxic biomarkers observed in the present study indicate genomic damage. This suggests the importance of protective measures to be taken during the dissection hours to prevent or minimize exposure to FA.

## Morphological variations of internal acoustic meatus: CT Study

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**Background:** The posterior surface of the petrous part of temporal bone forms much of the anterolateral wall of the posterior cranial fossa. It contains the internal acoustic meatus (IAM) which lies anterosuperior to the jugular foramen, and transmits the facial and vestibulocochlear nerves, the nervusintermedius, and labyrinthine vessels. Most of pathologies affecting IAM arise intrinsically. The smaller lesions, given the limited free space, can produce significant clinical symptoms.

**Aims & Objectives:** To conduct the morphometric analysis & variations of anatomy of internal acoustic meatus in north Indian population.

**Materials & Methods:** This study examined 200 Computerized tomography (CT) (110 males,90females) head in axial section with no evidence of disease, that might alter foraminal anatomy, from picture archiving & communication system (PACS) of Dr RMLIMS, Lucknow. The Computer-assisted measurements of foraminal parameters were obtained on both right and left sides. The results were statistically analysed by using an unpaired t-test, paired t-test, ANOVA.

**Result:** Shapes observed in our study were- funnel shaped and bud shaped; funnel shape being the major variant. No septation / bridging was seen. The overall cranial opening diameter, length of internal acoustic meatus & distance from mid-sagittal plane in males were  $5.51 \pm 1.16$ ,  $9.66 \pm 1.81$  &  $24.46 \pm 2.18$  and in females they were  $5.26 \pm 1.01$ ,  $9.83 \pm 1.15$  &  $22.35 \pm 1.81$  respectively.

**Conclusion:** The shape of the IAM varies greatly. No statistically significant difference seen in right and left side or gender-wise. A thorough knowledge of the normal dimensions of IAM are important for evaluation and management of disease involving the internal acoustic meatus.

## Cephalo-anatomy of the Meitei Males of Manipur Valley: A Secular Trend

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Head dimensions and Cephalic Index are considered as a simplest and most efficient way to indicate racial differences. The size and shape of the head of an adult is the result of continuous interaction between genetic and environmental influences during growth period. The cephalic index, a derived ratio of head length and head breadth is very frequently used parameter for studying secular trend occurring in temporal dimension within a population. The purpose of this study is to examine the secular trend if any in the head dimensions viz. Maximum Head Length, Maximum Head Breadth, Horizontal Circumferences of Head and Head Height, Cephalic Index and Breadth Height Index of the MeiteiMale adult Population of Manipur valley. The findings of the study are based on the comparison of primary data collected from randomly selected 400 male adults of Imphal West District, Manipur whose age ranged from 21-60 yearswith secondary data of Singh (1992) representing the Meitei Male population. Overall findings of the present study reveal that a secular trend of increasing dimensionsare observed in all the four parameters whereas a decreasing trend in two indices in the present generation revealing significant difference from the previous generation. Even though there is no significant difference qualitatively between the present and previous generation as regards to frequency percent distribution of Cephalic Index and Breadth Height Index,a tendency towards Brachycephalic and Acrocephalic head form is clearly observed in the present generation. The overall findings reveal an increasing mean value in all the parameters reflecting a positive secular trend. Thus, the result of this study will be of great importance to the medical practitioners, forensic experts, cephalo-facial surgeons and genetics in their clinical practices.

## Ink Method – Easy and Effective to take Dermatoglyphic Prints

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**Background:** The word “Dermatoglyphics” indicates the study of epidermal ridge configuration on palms, soles and fingertips. The study of dermatoglyphics requires good quality fingerprint and palmar prints.

**Aim & Objectives:** 1. To study the finger and palmar dermatoglyphic pattern using the different methods. 2. To compare the advantages and disadvantages among the preferred methods.

**Material & methods:** 60 volunteers were included in the study and various methods like ink method, scanning, photography, transparent adhesive methods were preferred to obtain the dermatoglyphic pattern of finger and palms bilaterally.

**Results:** The dermatoglyphic prints obtained by Ink method had the following advantage over the other methods like simple technique, cost effective, good clarity and time consuming, whereas in Photographic method Polaroid camera was used, which was expensive and image formed based on the principle of internal reflection. Similarly scanning method was also expensive and had the disadvantage of thermal feel to the participants. Transparent adhesive method was simple to perform but had the disadvantage of inability to obtain the prints of the entire hand.

**Conclusion:** The dermatoglyphic pattern are differentiated in their definitive form during third to fourth month of fetal life and once formed remain permanent and never change throughout the life except in dimensions in proportion to the growth of an individual. Hence appropriate method has to be adopted to obtain them, which can serve as a screening tool for many clinical diseases.

## Dermatoglyphic study in Congenital Heart Diseases

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**Background:** The term dermatoglyphics, Greek word is a scientific study of epidermal ridges and their configuration on palmar and plantar region. It is differentiated in their definitive form during 3<sup>rd</sup> and 4<sup>th</sup> month of intrauterine life and their development is completed by 7<sup>th</sup> month of gestation, parallelly. Heart's development extends from 3<sup>rd</sup> to 8<sup>th</sup> weeks of intrauterine life where both are under genetically controlled. Any factor influencing the genetic control may change the pattern and bring about congenital cardiac diseases.

**Aim & Objectives:** 1. To study the finger and palmar dermatoglyphic pattern in patients of congenital heart disease. 2. To compare dermatoglyphic configuration in patients of congenital heart disease with those of normal population.

**Material & methods:** This study includes analysis and comparison of dermatoglyphic pattern of 86 subjects (36 patients with congenital heart diseases –diagnosed to have ASD, VSD, PDA, TOF and 50 controls). The prints were obtained by "Ink method".

**Results:** Among the various groups in congenital heart diseases, more number of VSD cases were found, ASD had the maximum frequency of whorls pattern, VSD had the maximum frequency of radial loops and is found to be nil with PDA. Ulnar loops were found with ASD but less than that of found in PDA when compared with the controls. The 'atd' angle among the cases were found to be wide when compared with the controls.

**Conclusion:** The dermatoglyphic patterns obtained from cases had significant increase in ulnar loops, radial loops and atd angle when compared with the controls. Hence analysis of dermatoglyphic pattern can be considered as a screening tool to detect various congenital diseases at an earlier stage particularly subjects with congenital heart diseases.

## Variations in The Branching Pattern of The Third Part Of Axillary Artery

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**Background:** Axillary artery is the continuation of subclavian artery. Various studies have been conducted in branching pattern of axillary artery. Its third part being commonly the site of anatomical variations, has interested us to focus our study on it.

**Aims and objectives:** To study the branching pattern of third part of axillary artery and identify the possible anatomical variations that can be expected during routine investigations and examinations.

**Materials and methods:** This study was done in 60 upperlimbs of 30 formalin fixed cadavers in Institute of anatomy, Madurai medical college, Madurai during 2018-2020. Upperlimbs of both sides belonging to both sexes were included. Specimens damaged due to surgical procedures or pathologies distorting the structures were excluded. Dissection of the axillary region and arm is done as per the directions in cunningham's manual of dissection. Results were noted and analysed by statistical tests. Variations reported in other researches were also studied.

**Results:** Variable origin of superior ulnar collateral artery from third part of axillary artery and origin of profunda brachii artery from posterior circumflex artery were observed. Both variations were observed unilaterally while the other side showed normal branching patterns.

**Conclusion:** Axillary artery can be used for cannulation in various diagnostic and therapeutic procedures like intra-aortic balloon pump, bypass surgeries and for placing musculo-cutaneous flaps. We hope our study on anatomy and variations in branching pattern of axillary artery may help the surgeons and radiologists to avoid injuries during the interventional procedures and misinterpretation during routine investigations.

## A Descriptive Study of Fused Cervical Vertebra – C2-C3 Synostosis

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**Background:** Anomalies in the vertebral column are common. One such anomaly is the fusion of cervical vertebra (FCV), in which two cervical vertebrae are fused together structurally and function as a single unit. The commonest site of fusion among cervical vertebrae is C2-C3. This may be either congenital or acquired. In most cases this condition is asymptomatic but in some cases it may present with various neurological manifestations like limitation of neck movements, muscle weakness, sensory deficits etc.

**Aims and objectives:** The present study was aimed to estimate the incidence of C2-C3 synostosis in South Indian population and to describe morphological features of specimens with C2-C3 synostosis.

**Materials and methods:** The present study was conducted on 186 dry adult axis (C2) vertebrae obtained from the osteology lab of Institute of Anatomy, Madurai Medical College. The specimens were well examined, photographed and relevant anatomical features and measurements were recorded.

**Results:** Of the 186 specimen examined, 3 C2 vertebrae had fusion with C3 vertebra resulting in an incidence of 1.61%.

**Conclusion:** The knowledge of C2-C3 synostosis is important for clinicians to rule out syndromes such as Klippel-feil syndrome, Crouzon syndrome, which causes abnormalities in neck movements. Awareness of this anomaly is important for anatomists, orthopedists, neurologists, neurosurgeons, dentists, physiotherapists and especially anaesthetists while doing endotracheal intubation, where extension of neck is done.

## Embalming in Pandemic

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**Background:** COVID-19 is an unprepared pandemic situation. Embalmers are not well trained for this moment of invisible war. There are no proper guidelines to face this situation in India.

**Aims and objectives:** Many paper and research work has been done on embalming in USA and UK, according to their standard of health care. This study was conducted in Institute of Anatomy, Madurai Medical College from March to August 2020 and safety protocol measures for embalming formulated with available resources.

**Materials and methods:** This study was done referring many research articles published, collecting information from WHO bulletin, references from Book of infectious diseases. Five embalming done in Madurai medical college, from March to August 2020, great care taken in each procedure, and only the licensed embalmer exposed during the embalming process and their follow up done, results notes.

**Results:** Covering of the face with a damp cloth during the removal and pre-embalming procedures is highly recommended. COVID -19 is not a bloodborne infection, a prudent step to reduce your standard risk is to use a system of "closed drainage."

**Conclusion:** Embalming should be done according to CDC guidelines and approved professional standards of care. Refrigeration after embalming may provide an extra layer of security until the time of final disposition. Using CDC protocols, proper PPE, standards of care, previous training, experience, and good common-sense practices, safe embalming of COVID-19 deaths is possible.

## Epigastric Heteropagus Twin – A Case Report

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**Introduction:** Expected frequency of conjoint twins is 1 in 50000 to 100000 live births. Asymmetrical conjoined twins are called parasitic or heteropagus twins. The site and extent of twin fusion is variable if parasite attached to the host in epigastric region it is named as epigastric heteropagus.

**Case Description:** 29-year-old women, G3P2, last birth FTNVD and had a male baby. Antenatal Ultrasound done at peripheral center found omphalocele. She was referred at 25 weeks of gestation to higher center for fetal anomaly scan and it was found to have an epigastric heteropagus twin. Termination was planned and post termination found to be epigastric heteropagus twin, normal twin had omphalocele, AVSD with malposed great vessels.

**Discussion:** In second week of gestation two heterozygotic embryos fuse and form a common embryonic structure containing two embryonic discs but a single yolk sac shown by fission theory and incomplete division of the embryo followed by subsequent fusion at 14–15 days after fertilization resulting in conjoined twinning. Ischemic atrophy, early malnourishment in one of twins induces selective degeneration in upper half of the body and makes it totally dependent for growth on the autosite shown by fusion theory.

**Conclusion:** Standard ultrasound at end of first trimester can detect this anomaly and prevent continuing anomalous fetal pregnancy and birth, although a rare anomaly thorough knowledge about this will be helpful for sonologist, obstetrician and pediatrician while handling similar cases. It is useful for medical student's study also.

## Study of Congenital Anomalies in South Indian Foetuses

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**Background:** Congenital anomalies account for majority of perinatal and neonatal deaths in India. This study helps to know the frequency, prevalence and pattern of congenital anomalies, which can be used to develop strategies for antenatal and postnatal counselling and treatment. Aims and objectives: To study the incidence of congenital anomalies of foetuses and associated risk factors.

**Materials and methods:** Descriptive study for detection of congenital anomalies of foetuses was done from May 2019 to March 2020. A total of 50 foetuses delivered in Department of Obstetrics and Gynaecology, Mahatma Gandhi Memorial Government Hospital, Trichy were collected and utilised for this study. Epidemiological data on foetuses including maternal age, parity, gestational age, consanguinity and associated anomalies were also collected.

**Results:** Anomalies were detected in 14 out of 50 foetuses (28 %). The mother's age group in eleven out of 14 (78 %) foetuses was between 20 to 35 years and three (22%) anomalous foetuses were born to mothers of less than 20 years age group. Nine of the anomalous foetuses were delivered by multigravida and five by primigravida. Age of eleven foetuses was between 16 to 20 weeks and remaining three were more than 20 weeks. CNS anomalies were 64%, skeletal anomalies 35%, renal anomalies 21%, chromosomal anomalies 21%, followed by cardiac and GIT anomalies.

**Conclusion:** Our study concluded that congenital anomalies were more in multigravida. Central nervous system anomalies were commonly observed. Early diagnosis, Antenatal ultrasound, proper counselling during pregnancy and subsequent pregnancies are needed for proper management of anomalies.

## An Observational Study on Variations in Fissures and Lobes of Cadaveric Lung Specimens

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**Background:** The fissures of lungs facilitate the movement of lobes in relation to one another and accommodate greater distension of the lung during respiration. The fissures may be complete, incomplete or absent altogether and knowledge of these variations is essential in various clinical and academic settings.

**Aims and objectives:** This study was conducted to observe the morphology of fissures and lobes, to note the variations, to compare them with previous studies and to find their clinical and academic significances.

**Materials and methods:** This study was undertaken in 50 cadaveric lung specimens obtained during routine anatomical dissections. The preserved lungs were exposed to study the morphological features like number of fissures and lobes. Presence of anatomical variations were observed and photographed.

**Results:** Of the total 50 lung (25 right and 25 left) specimens, 12 right sided lungs showed variations with incomplete or absent fissures. One of them presented with azygos lobe. On the left side, 8 lungs showed variations with accessory, incomplete or absent fissures.

**Conclusion:** A detailed knowledge of the variations in fissures and lobes of lung occurring in every population is essential for the proper interpretation of radiological images by the radiologists. This study will also help cardiothoracic surgeons to prevent complications while performing lobectomies and segmental resections, clinicians who are encountering an increasing burden of treating lung related infection complications, researchers who are looking to study syndromes such as heterotaxy, and students who are constantly in search of knowledge.

## Morphological features of Fossa Ovalis and its clinical importance

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**Background:** Fossa ovalis (FOv) is an oval depression present in the inter atrial septum which is formed by septum primum and septum secundum. The floor is formed by septum primum and the limbus is formed by septum secundum. Fossa ovalis varies in size, shape and prominence in every individual. FOv may be aneurysmal, redundant or patent. Patent Foramen Ovale (PFO) leads to cytogenic stroke, decompression sickness in divers. It acts as a channel for paradoxical embolism and lead to cerebro vascular accident.

**Aims and objectives:** To know the morphological variations of Fossa Ovalis by measuring the shape, size, annulus pattern and PFO.

**Materials and methods:** This study was carried out in 50 formalin fixed adult human hearts available in the Department of Anatomy, K.A.P.V Govt medical college, Trichy. After opening the right atrium, FOv shape was observed. The size was measured with the digital Vernier caliper; prominence of limbus and probe patency was noted.

**Results:** In this study the shape of the Fossa ovalis was oval-76%; circular -22%; elliptical-2%. The size of the FOv -average transverse diameter was 15.5mm; average vertical diameter was 12.9mm; the rim of the annulus was raised in 84% and 16% have probe patency.

**Conclusion:** This study gives information about the Morphology of Fossa ovalis. It is useful in transcatheterization to select probe in PFO and also useful for selection of device in treating ASD & PFO.

## Organ specific toxicity analysis in rat viscera after the exposure of calcium carbide and ethylene glycol, the most commonly used fruit ripening agents in India

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**Background:** Naturally ripened fruits play a vital role in human nutrition. Under certain conditions, synthetic chemicals like calcium carbide (CaC<sub>2</sub>) and ethylene glycol (EG) are being used illegally in India countries for fruit ripening.

**Aims and objectives:** This preclinical study evaluated the toxicity on different organs after the exposure of industrial-grade CaC<sub>2</sub> and EG to the rats.

**Materials and methods:** Acute toxicity was induced by the oral administration of a single dose of chemicals to the rats, and their morbidity and mortality were monitored. For sub-acute study, different organs of animals were analyzed biochemically and histologically after the exposure of low doses of chemicals for 30 days and 180 days for chronic study.

**Results:** At an acute dose of 5 mg/kg body weight of CaC<sub>2</sub>, 85% of the animals were found dead within 14 days; however, no mortality was observed following EG administration. At sub-acute doses, RBC and hemoglobin levels were found to be declined ( $p < 0.01$ ), whereas total WBC especially lymphocytes, were elevated remarkably ( $p < 0.01$ ). Total protein, albumin, and urea were also found to be increased ( $p < 0.01$ ). Histopathological observations support the toxicity in sub-acute and chronic study of CaC<sub>2</sub> and EG.

**Conclusion:** The study revealed that the industrial grade CaC<sub>2</sub> and EG induce toxic effects on the internal organs of rats especially in the liver and intestine. The hepatotoxicity can be ascribed to inflammation could be due to the presence of impurities like arsenic and phosphorus contents in the CaC<sub>2</sub>.

## Memory enhancing and anti-anxiety properties of Bacopamonnieria against aluminium chloride induced neurodegeneration in Wistar rats

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**Background:** Aluminum is a potential neurotoxin for humans. It causes pathogenesis of neurodegenerative disorders such as Alzheimer's disease and dementia. Furthermore, it is found to cause anxiety on oral administration to rodents.

**Aims and objectives:** Our study examined the biochemical and behavioral effects of aluminum in Wistar rats highlighting the hippocampal region of the brain, which is concerned with declarative, spatial and episodic memory. Besides these, the effect of Bacopamonnieria (BM) treatment on aluminum induced neurodegeneration and anxiety were investigated.

**Materials and methods:** Wistar rats were administered orally with Aluminum chloride (AlCl<sub>3</sub>) for 4 weeks to induce neurodegeneration. BM at two doses (100 and 200 mg/kg body weight) for two groups of rats was administered every day following the AlCl<sub>3</sub> administration. Spatial learning and retention of memory were assessed using Morris water maze (MWM) followed by the estimation of acetylcholine esterase (AChE) activity and antioxidant enzyme activity in the hippocampus. Level of Anxiety was assessed using elevated plus maze (EPM) paradigm and plasma corticosterone levels.

**Results:** BM treatment improved learning and memory function in rats as seen from MWM task by its AChE inhibition and antioxidant properties. Besides, BM alleviated the anxiety as seen from EPM paradigm and by regulating plasma corticosterone level.

**Conclusion:** BM protects the hippocampal neurons from AlCl<sub>3</sub> induced neurodegeneration and reduces the anxiety.

## A Study of Coronary Dominance Using Silicon Casts & Its Clinical Significance.

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**Background:** Coronary artery disease has become one of the major causes of death in the recent years in developing countries like India. The coronary dominance pattern varies in different regions & populations. The use of silicon casts to study the coronary vasculature has not been found in the previous literature hence we opine that this was the first time we have used the silicon casts to study the coronary arteries.

**Aims & Objectives:** Our aim is to determine the coronary dominance using low cost silicon casts among the south Indian population & to determine its clinical significance.

**Methodology:** In the present study 110 adult human cadaveric hearts (90 males & 20 females) were utilized & silicon material was injected into each coronary artery & cast was removed. The origin of posterior inter-ventricular artery was taken as the criteria for determining the dominance pattern.

**Result:** Out of 110 hearts, 92 (83.63%) had right dominance, 12 (10.90%) had left dominance & only 6 (5.45%) had co-dominant patterns.

**Conclusion:** Knowledge of coronary dominance will help the cardiologist & cardiac surgeons to evaluate and plan treatment of patients with unstable angina & myocardial infarction among the south Indian population. This is a new innovative technique wherein silicon is being used to study the vascular pattern, silicon was found to have more advantages than resins. Silicon casts can be utilized to study various vascular patterns of different viscera in intricate details by the future researchers & academicians in future.

## Estimation of Gestational Age by Ultrasound Measurement of Fetal Transcerebellar Diameter

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**Background:** The accurate understanding of gestational age is a keystone in an obstetrician's ability for antepartum care and management. Failure can result in iatrogenic prematurity which is associated with increased perinatal morbidity and mortality. TCD normogram predicts gestational age with an accuracy of 94% in the third trimester. The present study aims to evaluate the application and accuracy of transverse cerebellar diameter in determining the gestational age of the fetus and Its Correlation.

**Methods:** A total of 100 pregnant women who were referred for antenatal ultrasound examinations were performed in healthy pregnant women with normal fetuses between 25-32 weeks of gestation. A cross sectional prospective study conducted to determine the different ultrasonographic interpretations concerned.

**Results:** Mothers mean age was 24 years and mean gestational age depending on ultrasound was  $28.4 \pm 0.75$  (27-30.2) weeks. The mean fetal biometry parameters including BPD of the study population was  $73 \pm 2.3$ mm (67-80), HC was  $264 \pm 8.7$ mm (237.8-311), AC was  $244 \pm 8.9$  mm (226.6-265.9), FL was  $55 \pm 2.1$ mm (49.5-59.6), FHR was  $149 \pm 8.5$  beats (121-175). The mean Trans cerebellar measurement of fetus of mothers was  $31 \pm 1.1$  mm (range 28.6 - 33.9 mm).The correlation coefficient between period of gestation and transverse cerebellar diameter was found to be 0.99at 27-30 weeks which was statistically significant ( $p < 0.001$ ) ( $r > 0.99$ ).

**Conclusions:** From the present study, we can see TCD increases linearly with gestational age. The correlation between gestational age and the gestational age by TCD seems to increase from 28 to 30 weeks. There is a good correlation between gestational age derived from TCD and gestational age from established biometric indices like BPD, HC, AC, and FL.

## COMPARISON OF CONVENTIONAL CHALK AND BOARD LECTURE AND POWER POINT AIDED LECTURE FOR LEARNING ANATOMY AMONG 1<sup>ST</sup> M.B.B.S STUDENTS.

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**Background:** Recently there has been an increase in the usage of modern techniques in teaching and learning processes. Also, there is a debate on whether a traditional chalk and board teaching be completely replaced by the newer medical education technologies or not. Hence present study is undertaken to find out students' perception towards different teaching methodologies.

**Aim and Objectives:** The present study is aimed to assess the effectiveness of chalk and board method, effectiveness of power point method, effectiveness of combination of chalk and board and powerpoint method for teaching anatomy in first year medical students.

**Material & Methodology:** In present study of students were participated. Three different topics were taught to three different group of students by three different methodologies. Such three sessions were conducted and crossing over of students was done. At end of third session students' feedback was taken in the form of open-ended questions.

**Observation & Result:** 45.82% responses of students preferred combination of chalk board and powerpoint aided lecture method as most effective compare to chalk board (38.34%) aided lecture and powerpoint (16.65%) aided lecture.

**Conclusion:** Modern teaching aids may be added as teaching tool but conventional one can is not replaced.

## Analysis of 2D: 4D ratio among transgender women (MtF), male and female gender in the South Indian population

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**Background:** There is a 2D:4D ratio in humans that gives considerable interest in research. They exhibit sexual dimorphism among males and females. The index and ring fingers relative length are more in female than the male. However, the ratio between 2D:4D and gender identity disorder (GID) is still controversial. The prenatal exposure of the androgen hormone plays a vital role in the differential growth of the index and ring finger.

**Aim and objective:** This research paper investigates the 2D:4D mean ratio in transgender women in the south Indian population. To identify the determinants and to find out the transgender from finger measurement. To calculate the ratio of 2D:4D among the three genders to compare the measurements of 2D:4D ratio of transgender women with those of male and female.

**Materials and methods:** A total of 392 subjects (Male 130, Female 122 and Transgender women 140) were enrolled for this study. The photo-scanning method was used for recording the hand and converted into an image file. Measurements were taken by digitizer software with the help of a computer. Measurements of 2D:4D is compared by using ANOVA to find out any mean difference among the group. Then a comparison of such values between two groups has been made by student's T-test for its significance.

**Result:** The left 2D:4D mean ratio between the male and female gender is significant ( $p=0.001$ ). The right and left 2D:4D mean ratio between female and transgender women is significant ( $p=0.001$ ). In-between male and transgender women, both right and left 2D:4D mean ratio is insignificant (Left 2D:4D mean ratio  $p=0.997$  and Right 2D:4D mean ratio  $p=0.748$ ). Conclusion: The result indicates that the 2D:4D mean ratio of transgender women significantly differ from that of female but not significant with the male.

## Distribution of follicular dendritic cells in normal and infected human appendix by immunohistochemistry

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**Background:** Appendix is a component of gut associated lymphoid tissue.

Follicular dendritic cells are non-migratory population found in primary and secondary follicles of the B-cell area of the lymph nodes, spleen, mucosa associated lymph nodes (MALT) and Gut associated lymph nodes (GALT). FDCs play a pivotal role in antigen presentation in immune system.

**Aims and Objectives:** To demonstrate the follicular dendritic cells present in normal and infected appendix. To find out the role of germinal centers in humoral immunity in appendix.

**Material and Methods:** total number of samples-100 (75 infected and 25 are normal appendix)

Samples were divided with different-2 age groups. (0 to 20 yrs, 21 to 40 yrs, 41 to 60 yrs). The specimens of appendix collected from dept. of pathology mgmch jaipur. All the specimens preserved in 10% formalin solution and immunohistochemistry procedure applied with mouse anti-human monoclonal CD 35 marker using polymer HRP detection system which detect the follicular dendritic cells.

**Results:** the study shows that the CD35 positive FDCs were present in reticular pattern in the germinal center, in most of the cases of appendicitis the FDCs were in scattered pattern in mucosa and germinal centers were decrease in number according to increasing order of age. Conclusion: FDCs are demonstrated in the follicles of normal appendix and scattered pattern in lymph nodes and mucosa of inflamed appendix. FDC form an antigen retain reticulum and associated with trapping of immune complexes.

## Immunohistochemistry of Glut-2 Based Studies on Islets of Pancreas in Type 2 Diabetic Male Wistar Albino rat after the administration Of GymnemaSylvestre and Metformin

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**Background:** Diabetes mellitus is the generally known metabolic disorder affecting the individuals' not only the elderly population but impacts irrespective of all age groups. Amongst the diverse etiology of diabetes, reduction of glucose transporter GLUT-2 is accompanied by a loss in glucose-mediated insulin secretion causing diabetes. Though there are various treatment strategies practiced worldwide to treat diabetes, the present scenario is the demand of time to use the herbal drugs with minimal detrimental effects.

**Aim and objective:** Considering the benefits of Gymnemasylvestre anti-diabetic herbal drug, our current study is designed to expose the plausible relationship between the anti-diabetic activity and GLUT-2 expression, and the efficacy is evaluated in a streptozotocin-induced diabetic model.

**Materials and Methods:** Wistar albino rats (n=36) of weighing about 140g-160g were used for this study. Each group consisting of 6 animals and were divided such as Group I, a control animal, Group II, animals were fed a high-fat diet for 42 days, Group III, a streptozotocin-induced diabetic model ( multiple-dose for 5 successive days). The Group IV and Group V animals were induced diabetic with Streptozotocin and treated using ethanolic extract of Gymnemasylvestre at low dosage (200 mg/kg b.w.) and high dosage (400 mg/kg b.w.) respectively. Group VI is positive control of animals induced diabetic with Streptozotocin and administered with Metformin (25mg/kg b.w. for 22 days). During the experimental period blood glucose level and the animal weight were carefully monitored.

**Results:** Decreased body weight, pancreases weight, and increased blood glucose were observed Group III along with reducing level the GLUT-2 expression indicating the manifestation of diabetes. Conversely these abnormalities are significantly restored after the treatment with Gymnemasylvestre in diabetic rats interestingly in the higher dosage.

**Conclusion:** The Gymnemasylvestre displays the antidiabetic activity through the regeneration of  $\beta$ -cells maintaining GLUT-2 expression in diabetic induced animal model dose-dependently suggesting effective anti-diabetic herbal drug. Our histological of pancreatic tissue also confirm the regeneration of beta cells. The ameliorating effects of the Gymnemasylvestre could be attributed to the bioactive components present in this herbal drug the saponin.

## Quantitative and qualitative analysis of Dermatoglyphics to predict Hypertension

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**Background:** Hypertension or high blood pressure is a long-term medical condition in which the blood pressure is persistently elevated and dermatoglyphics is the study of epidermal ridges present on the palms and soles. This study is an attempt at establishing the relationship between dermatoglyphics and hypertension and its usefulness as a tool in predicting hypertension.

**Aims and objectives:** To focus on the predictive strength of dermatoglyphics in hypertensive. To study the dermatoglyphic features associated with hypertension in the local population. Compare the data with studies available in literature and examine its applicability as a diagnostic tool.

**Materials and methods:** Materials - Fingerprints of both hands in normal and hypertensive male and female patients in the age group of 30-60 years are used. Method-The subject is asked to wash and dry both hands thoroughly and sanitized. A layer of printers ink is spread uniformly on a glass tile with a rubber roller. The subject then places the palmar surface of each hand on the tile and then on the white paper on a flat surface. Prints of both hands are taken.

**Results:** Decrease in the number of whorls in hypertensive patients. Increase in ridge density, a-b ridge count and atd angle in hypertensive patients.

**Conclusion:** The study of dermatoglyphics can be applied usefully in medicine and genetics if used correctly. Though the results of this study is not statistically significant, it shows the predictive strength of dermatoglyphics in hypertension and the scope for further research.

## Study on neonatal anthropometry in intrauterine growth restriction

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**Background:** Intrauterine growth restriction is a clinical definition and applies to neonates born with clinical features of malnutrition and in-utero growth retardation, irrespective of their birth weight percentile. It has adverse effect not only in fetus but on perinatal, maternal and neonatal outcome also.

**Aims and objectives:** To study the neonatal anthropometry and to access the level of brain damage in intrauterine growth restriction.

**Materials and methods:** This work is carried out in SVS Medical College Mahbubnagar, Telangana among 100 neonates. Anthropometric parameters like mid-arm circumference, abdominal circumference, chest circumference and head circumference were measured in centimeters with a nonelastictape soon after delivery. Newborn birth weight was recorded using baby weighing machine. Cephalization index is obtained by taking the ratio of head circumference to body weight.

**Results:** In normal neonates the mid-arm/head circumference ratios ranged from 0.32–0.33 and in a term IUGR infant, a value less than 0.27. Cephalization index is higher in case of intrauterine growth restriction when compared to normal.

**Conclusion:** Higher cephalization index reflected a greater degree of brain vulnerability and increased likelihood of cerebral palsy and severe psychomotor retardation

## Low birth weight outcomes in correlation with maternal anthropometry

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**Background:** IUGR and low birth weight in neonates is a one of the major problem, if we treated well in advance, we can reduce the mortality rate. Traditional birth attendants should have the proper knowledge and trained to reduce the mortality rate.

**Aims & objectives:** maternal anthropometric measurements in first trimester, if any abnormality is detected then women should be referred to institutes for safe delivery, hence the outcome of pregnancy would be better.

**Materials and methods:** 100 singleton pregnant mothers and their full-term neonates were examined in Mahbubnagar region. Maternal anthropometric measurements included weight (kg), height (cm) and mid-arm circumference (cm) taken from antenatal visit records in first trimester. Statistical analysis was made using simple linear regression and critical values of MWt, MHt, MMAC and MBMI were ascertained for a birth weight of 2500g.

**Results:** MWt kg 28.5; MHt 140cm; Mid arm cir. 18cm; Maternal body mass index (KG/M<sup>2</sup>) = 15.

**Conclusion:** Peripheral health workers may easily be trained in the use of weighing machines, height rods and tapes so that they can identify the "at risk" cases.

## Latest Treatments to Remove Facial Scars Caused by Acne

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**Background:** People with acne scars on their face make them to feel inferior. There the technologies raised to remove their complex.

**Aims and objectives:** To remove facial acne scars permanently w/o side effects.

**Materials and methods:** 1. Chemical Peeling - Chemical peels are used to improve the appearance of skin. In this treatment, a solution is applied to the skin which eventually peels off. They are performed on face, neck, back, hands, etc and can be used to treat certain types of acne, to reduce age spots, freckles and other types of pigmentation including acne pigmentation and melasma. Peels improve the look and feel of skin that is dull in texture and colour. 2. Fractional Co2 Laser- The Gold Standard & time-tested technology for various indications like acne scars, skin resurfacing, uneven skin texture, large pores and stretch marks. 3. Fillers for Scars: Fillers instantly replace the lost volume from the face. Fillers are a quick fix to fill acne scars. 4. Micro/Meso Botox- A unique treatment which makes scars less visible within a week to 10 days and without any downtime.

**Result:** Eventually within 5-10 days the scars start to reduce and permanently disappears.

**Conclusion:** All the above-mentioned methods are safe. Cosmetologists study the skin type and accordingly suggest one of the methods.

## A Case of Moebius Syndrome

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**Introduction:** Moebius syndrome is characterized by congenital aplasia of facial paresis and abduction weakness.

**Case Description:** History: A 10-year-old female child came to our hospital with chief complaints of inability to close the eyelids and inability to close lips since birth and difficulty in phonation since early childhood. History of dribbling of saliva and epiphora was present. Examination: Head to foot examination revealed brachysyndactyly of second, third and fifth fingers with first web contracture in left hand and round mouth with anterior phrenulum of upper lip. Anterior segment examination revealed lagophthalmos with adequate Bell's phenomenon and medial canthal tendon laxity in both eyes. Child had 6/9p vision in both eyes, not improving with pinhole. Examination of extraocular movements showed child had horizontal gaze palsy and absence of abduction of both eyes.

**Investigations:** X ray of left-hand revealed presence of shortening of middle phalanx of second, third and fifth fingers.

**Diagnosis:** Moebius syndrome.

**Differential Diagnosis:** Hereditary Congenital facial paresis.

**Treatment:** Child was instructed to tap lids close during sleep and advised to use artificial tears. Child has been scheduled for corrective surgery for brachysyndactyly and anterior phrenulum of upper lip.

**Discussion:** The child and her parents were informed about the symptoms of exposure keratitis and told to review if she has any such symptoms.

**Conclusion:** This case is presented for its rarity.

## Microvascular Decompression for Trigeminal Neuraglia

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**Background:** Microvascular decompression (MVD) is a surgery to relieve abnormal compression of a cranial nerve causing trigeminal neuralgia, glossopharyngeal neuralgia, or hemifacialspasm. MVD involves opening the skull (craniotomy) and inserting a sponge between the nerves and offending artery triggering the pain signals.

**Aims and Objective:** MVD is a surgical procedure to relieve the symptoms (pain, muscle twitching) caused by compression of a nerve by an artery or vein. This is one of the surgical treatments done to cure trigeminal neuralgia

**Materials and Methods:** Microvascular decompression (MVD), also known as the Jannetta procedure, is the most common surgical procedure for treating trigeminal neuralgia. In the procedure, the surgeon makes a small incision behind the ear and drills a small hole in the skull. Using microscopic visualization, the trigeminal nerve is exposed. In most cases, there is a blood vessel — typically an artery, but sometimes a vein — compressing the trigeminal nerve. By moving this blood vessel away from the nerve and interposing a padding made of Teflon felt, the pain is nearly always relieved.

**Result:** MVD is highly successful treating trigeminal neuralgia with relatively low risk of pain recurrence. The major benefit of MVD is that it causes no facial numbness compared to percutaneous stereotactic rhizotomy.

**Conclusion:** Therefore Micro vascular decompression is an effective treatment for trigeminal neuralgia refractory to the medical management.

## A comparative study on different teaching modalities in Anatomy among first year MBBS students in a medical college in Puducherry.

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**Background:** Anatomy is considered as the “Basis of the medical sciences”, through the study of which healthcare providers acquire basic knowledge to build a solid background. Knowledge, Skill and Attitude communications are the base of medicine. By understanding how the systems interact with good knowledge and skill, you can determine the proper care for each individual patient and their specific symptoms. With a foundation of anatomy, you will have the building blocks to make the proper decisions with good attitude and communications to provide accurate and quality care. Traditional classrooms, online lectures on anatomy and education apps and social medias such as Marrow, YouTube, Facebook, Instagram, Twitter (Educational groups and Pages) are the learning platform for Anatomy. Due to this COVID-19 crisis, there is an interruption in the continuity of the first-year academic program for the past 6 months. To continue the learning platform, institutions have adopted online classes. The main purpose of the study is to assess any change in the academic progress of the students and the student’s mentality towards study.

**Aims and Objectives:** To assess academic progress among first year MBBS students through traditional classroom. To assess academic progress among first year MBBS students through online platform. To compare the academic progress among first year MBBS students between traditional and online platform.

**Materials and Methods:** Sample– All the first year MBBS students have been included in the study after getting their informed consent. Inclusion criteria – All the first year MBBS students willing to take up the study after getting their informed consent. Exclusion criteria – Students who is not willing to take up the study have been excluded. Total sample size – 100 (First year MBBS students.) Questionnaire have been setup and communicated to all the samples included in the study through their email (Google forms). Data have been obtained and interpreted.

**Result:** 66.63 % of people gone towards traditional classroom way of learning. 33.37 % of people gone towards online classroom way of learning.

**Conclusion:** Majority of the people likes Traditional classroom way of learning compared to online mode of teaching Anatomy.

## Impact of age and gender on low grade inflammatory status in non-obese and obese healthy individuals of Belgaum Urban Population

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**Background:** Most of the previous studies have associated, excessive BMI with comorbidities due to low grade chronic inflammatory state, we wanted to study further about the impact of age transition from adolescence to young adulthood in males and females on low grade chronic inflammation who were appearing healthy with no Diabetes Mellitus, Hypertension and Euthyroid.

**Aims and Objectives:** Impact of age and gender on hormone adiponectin, hs-CRP, C3, C4, and ceruloplasmin in non-obese and obese healthy individuals of Belagavi urban population. Material and Methods: 280, Eligible participants were enrolled in the study, after obtaining informed consent and assent. Of these, 140 were young adults and adolescents each. Anthropometric measurements were obtained and categorized into non- obese and obese. Fasting blood sample was collected. Glucose, TSH levels if found normal then, Adiponectin, hs-CRP, were measured by standard methods.

**Results:** As age increases, adiponectin levels decreased while inflammatory marker levels increased in obese. In obese Adiponectin was in the lower range in females than males, while C3, C4 were in the higher range in females, than in males. No changes were seen in hs-CRP and Ceruloplasmin.

**Conclusion:** There was a significant link between obesity, age and gender. With ageing, especially in females, superadded to Obesity, inflammation was aggravated. Healthy obese are in phase of transition towards unhealthy obesity with aging particularly in females

## Evaluation of Knowledge, Attitude and Practices towards Diabetes and Determinant Factors of Diabetic Knowledge among Diabetic Patients

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**Background:** Diabetes Mellitus is a multifactorial metabolic disorder characterized by hyperglycaemia which on long standing results in microvascular and macrovascular complications. Knowledge, attitude and practices concerning diabetes mellitus are imperative to minimize the prevalence and morbidity associated with diabetes mellitus.

**Aim and Objectives:** To assess the level of knowledge, attitude and practices among patient with type 2 Diabetes Mellitus and to determine the association between gender, age group, educational status and duration of diabetes with knowledge score.

**Materials and Methods:** This cross-sectional study was conducted at a teaching rural hospital among 100 known diabetic patients visiting the hospital for regular check-up. The self-administered questionnaire collected the data to assess knowledge, attitude and practices towards diabetes and knowledge determinant factors. Participant's socio-demographic characteristics including gender, level of education and duration of diabetes was reported using descriptive statistics. Mean and SD was used to express the age, anthropometric measurements, glucose levels and knowledge score. The response of knowledge, attitude and practice questions were expressed as frequency and percentage. The logistic regression analysis was done to determine the association between gender, age group, educational status and duration of diabetes with knowledge score. The level of statistical significance was set at  $p < 0.05$ .

**Results:** Of the total 100 participants, 52% were males. 77%, 88% and 76% had good knowledge, positive attitude and good practices respectively. 77% had good knowledge of diabetes symptoms, risk factors, complications, life-style modifications and glucose monitoring. The regression analysis showed increased odds of good knowledge among females [(1.552 (0.559 - 4.311))] and in subjects with diabetes of more than 5years [1.090 (0.278 - 4.264)]. Further the analysis showed that the knowledge on diabetes was poor as participant's age advanced [OR: 0.281(0.065 - 1.217) & OR: 0.199 (0.046 - 0.864)]. Additionally, there was increased odds of good knowledge in participants with increase in educational level.

**Conclusion:** Majority of the participants had good knowledge, positive attitude and good practices, however there is still scope for improvement in the areas such as inclusion of regular exercise, periodic lipid profile analysis and eye examination.

## Association of serum calcium, phosphorus and calcium x phosphorus product in pre and post renal transplant patients

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**Background:** Renal transplantation is the most recommended therapy for patients with end stage renal disease (ESRD). Advances in technology, surgical techniques and pharmacotherapy have increased the success rate of renal transplantation. However, various long-term side effects are reported post transplantation. A commonly reported complication is mineral and bone disorder (MBD).

**Aims & Objectives:** The present study was planned to estimate calcium, Phosphorus and calcium phosphorus product in patients with ESRD and after renal transplant 3 and 6 months following.

**Materials and Methods:** This observational study included 50 patients followed from Pre-Renal Transplant to 3 to 6 months post transplant. Blood samples were collected to analyse the serum calcium, Phosphorus and vitamin D on vitros 5600. To find the significance of difference in repeated measures, the Repeated Measures of ANOVA (Mauchly's test) was used.

**Results:** Mean serum calcium levels were significantly lower in Pre-Renal transplant population ( $8.18 \pm 1.37$ ) as compared to Post 3 months ( $9.45 \pm 0.69$ ) and Post 6 months ( $10.37 \pm 0.41$ ). Mean serum phosphorus levels were statistically higher in Pre-Renal Transplant ( $6.18 \pm 1.51$ ) as compared to Post 3 months ( $3.25 \pm 0.33$ ) and Post 6 months ( $2.69 \pm 0.40$ ). Serum Vitamin D and calcium levels were observed to increase following renal transplant ( $P < 0.0001$ ). Whereas serum Phosphorus and calcium x Phosphorus product exhibited a significant fall following renal transplant.

**Conclusion:** Derangement of bone-mineral markers is a common manifestation of CKD. Post-transplant improvement of kidney function needs to be evaluated in context of bone-mineral metabolism also.

## Altered levels of Fructosamine and Glycated Hemoglobin in Clinical Hypothyroid and Hyperthyroid patients without Diabetes Mellitus

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**Background:** Diabetes Mellitus has always been a complication in patients with long standing history of thyroid disorders, but we wanted to know the glycemic status in freshly diagnosed cases of clinically proven hypo and hyperthyroid individuals.

**Aims and Objectives:** Estimation of fructosamine and glycated Haemoglobin levels in newly diagnosed clinical hypothyroid and hyperthyroid patients without Diabetes Mellitus.

**Material and Methods:** Total of 152 participants, suspected with thyroid disorder were screened (as per inclusion criteria) and finally 30 cases of hypothyroid, 30 cases of hyperthyroid and 30 healthy participants were chosen to be part of our study. In these participants Fructosamine levels were estimated by Nitro Blue Tetrazolium (NBT) and Glycated Hemoglobin levels by Ion-exchange HPLC method.

**Results:** There was a significant increase in the mean Fructosamine and Glycated Hemoglobin (HbA1c) levels in clinical hypothyroid group when compared with the controls. Pair wise comparison of Fructosamine ( $p=0.001$ ) and HbA1c ( $p=0.001$ ) levels with controls showed a statistically significant difference. In clinical hyperthyroid group the mean HbA1c levels were high and low Fructosamine levels when compared with the controls by one way ANOVA. Pair wise comparison of Fructosamine and HbA1c levels ( $p=0.001$ ) with controls showed a statistically significant difference.

**Conclusion:** Hyperglycemia ( $\geq 110$ mg/dL) most of the time goes unnoticed in freshly diagnosed thyroid patients, hence estimation of Fructosamine (as it gives the glycemic status of 2-3 weeks) could be a part of panel tests in diagnosed thyroid disorders.

## Comparison of calculated LDL-Cholesterol using Various Formulae with Directly Measured LDL-Cholesterol: A Retrospective study

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**Background:** Among the various risk factors for developing dyslipidemia and Cardiovascular Disease (CVD), elevated Low-Density Lipoprotein Cholesterol (LDL-C) has been recognized as an independent and widely accepted risk factor for CVD.

**Aims and objectives:** 1. To calculate LDL-C using various formulae. 2. To compare various formulae to calculate LDL-C with direct LDL-C measurement.

**Materials and methods:** Study design-Retrospective observational study. Study period- 3 Months. Sample size- 363. The data required for the present study was obtained from the investigation ledger of clinical Biochemistry section and same sample Triglyceride, Total Cholesterol and High-Density Lipoprotein Cholesterol was used for calculating LDL-C using various formulae.

**Results:** A total of 400 lipid profile reports were collected, of these, 37 reports had triglyceride level  $\geq 400$  mg/dl and hence 363 samples were included. There is no statistical difference between the direct LDL-C ( $131.64 \pm 29.34$  mg/dl) and LDL-C level calculated by Friedewald formula ( $133.85 \pm 35.97$  mg/dl,  $p > 0.05$ ). There is a highly significant statistical difference between the direct LDL-C and the LDL-C level calculated using all other formulae ( $p = 0.0001$ ) Cordova and Cordova formula ( $88.06 \pm 28.40$  mg/dl), Vujovic formula ( $80.44 \pm 15.52$  mg/dl), Ahmadi formula ( $186.34 \pm 63.26$  mg/dl), Anandaraja formula ( $92.46 \pm 32.37$  mg/dl), Puavillai formula ( $88.54 \pm 32.78$  mg/dl) and Hattori formula ( $77.45 \pm 30.31$  mg/dl).

**Conclusion:** The study established Friedewald formula as the most suitable method for calculating LDL-C in the absence of direct LDL-C measurement facilities. A large sample size and multicentric study is warranted to confirm which formula is most suitable for measuring the LDL-C in the absence of direct LDL-C measurement.

## RAAS pathway gene polymorphism in acute coronary syndrome

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**Background:** Acute Coronary Syndrome (ACS) refers to the clinical manifestation of CAD occurring as a result of acute myocardial ischemia. ACS is a sub-group of patients who present with acute chest pain in the form of unstable angina or acute myocardial infarction (AMI). Renin angiotensin system pathway gene have a role in cardiovascular homeostasis.

**Aims and Objectives:** To study distribution of genotypes and allele frequencies of ACE, AGT and AT1R gene polymorphisms in acute coronary syndrome.

**Materials and Methods:** Total 150 ACS Patients and 150 controls were included in this study. Study has been carried out in the Department of Human Genetics in collaboration with Care Hospital, Visakhapatnam Andhra Pradesh, India. Individuals coming with history of chest pain, with positive Electrocardiography findings and positive troponin-I are diagnosed as having ACS. Total DNA was extracted from whole blood using non-enzymatic method described by Lahiri and Nurnberger, (1991). ACE I/D, AGT M235T, AT1R A1166C Polymorphisms were detected by PCR –RFLP method. Genotype distribution and allele frequency analysis was done by chi square test. P value < 0.05 was taken as significant.

**Results:** ACE DD genotype and D allele ( $\chi^2=6.09$  and  $p=0.013$ ), AGT TT genotype and T allele ( $\chi^2=10.92$  and  $p=0.009$ ) were significantly associated with ACS cases when compared to controls. AT1R genotype was similar in both the groups.

**Conclusion:** The patients with ACE DD genotype, D allele and AGT TT genotype T allele had a higher risk of ACS when compared to the control group. So ACE inhibitors and receptor blockers may have a role in this group of patients.

## Serum uric acid and calcium levels as an independent risk factor in developing type 2 Diabetes Mellitus and their association with serum insulin

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**Background:** According to International Diabetes Federation (IDF), India has about 77 million Diabetes case in 2019. Hyperuricemia, has been established as a precursor of insulin resistance in previous studies and impaired calcium homeostasis alters carbohydrate metabolism and insulin secretion.

**Aims and Objectives:** This study was undertaken to evaluate serum uric acid (SUA) and calcium levels as an independent risk factor in developing type 2 Diabetes Mellitus (DM) patients and correlate them with fasting serum insulin.

**Materials and Methods:** A case-control study with 180 participants was done in Department of Biochemistry in collaboration with General Medicine and Community Medicine department, SCB, MCH, CTC. Newly diagnosed patients of type 2 DM were taken as cases and age and sex matched healthy volunteers were taken as controls. Fasting plasma glucose, serum insulin, uric acid, serum ionized calcium were measured and insulin resistance was calculated by HOMA-IR.

**Results:** Serum uric acid (p: 0.04) was lower in newly diagnosed diabetic cases than controls, while serum calcium was found to be higher among cases than controls. Significant positive correlation was observed between SUA and insulin (p:0.03), while serum calcium had a negative correlation with both serum insulin and SUA. Regression analysis showed insulin levels decreases with increase in serum uric acid.

## Validation of salivary glucose as a screening and prognostic tool of Diabetes mellitus

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**Background:** International Diabetes Federation has estimated a burden of 642 million diabetics on health services of all parts of the world by 2040. Estimation of blood glucose and glycosylated hemoglobin (HbA<sub>1c</sub>) is an essential investigation for monitoring and screening for diabetes which requires venipuncture at regular intervals of time causing anxiety and discomfort to the patient that discourages the patient further. Saliva is an abundant secretion of the body whose collection is easy and non-invasive. Hence salivary glucose could serve as a potential tool for monitoring and screening of diabetes.

**Aims and objectives:** To estimate salivary glucose levels and correlate the salivary glucose levels with fasting plasma glucose and HbA<sub>1c</sub> levels in diabetic individuals. Also, to derive a formula for the prediction of fasting plasma glucose and HbA<sub>1c</sub> using salivary glucose.

**Materials and methods:** Approval of the IEC was taken. 100 subjects with Diabetes mellitus who attended the Medicine OPD of HIMS, Varanasi consented to participate in the study. Saliva was collected by standard procedures in a sterile container and 2ml blood, each in fluoride and EDTA vacutainers. Glucose was estimated by GOD-POD method and HbA<sub>1c</sub> by HPLC method. Data was analyzed using SPSS 16.

**Results:** A strong and significant positive correlation of salivary glucose with plasma glucose and HbA<sub>1c</sub> was obtained. Also, a formula was derived for prediction of fasting plasma glucose and HbA<sub>1c</sub> by salivary glucose using regression analysis.

**Conclusion:** Saliva could be a potential easy and cost-effective tool for large scale screening, epidemiological intervention and monitoring of Diabetes mellitus.

## A study on the lipid ratios and inflammatory markers in pre-diabetic and diabetic patients

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**Background:** One of the leading causes of diabetic mortality is cardiovascular disease. Diabetes progression is preceded by pre-diabetic phase which is also at higher cardiovascular risk. Both hyperglycemia and atherosclerotic processes are inflammatory phenomenon. Keeping this in view, it was aimed to evaluate atherogenic indices and correlate them with inflammatory mediators.

**Methods:** This study included 80 controls, 80 pre-diabetic and 80 diabetic patients. Anthropometric parameters (BMI, WHR) and blood parameters like fasting glucose, HbA1c, lipid profile (cholesterol, HDL, LDL TG, VLDL), adiponectin, IL-6, CRP, fibrinogen and uric acid were analysed.

**Results:** Significantly high atherogenic indices were observed in pre-diabetic and diabetic subjects compared to healthy controls. The indices were also significantly correlated with BMI, fasting sugar, HbA1c, cholesterol, HDL, TG and LDL. The correlation with HDL was negative and with other parameters, the correlation was positive. In pre-diabetic patients, adiponectin showed significant negative correlation while fibrinogen and CRP showed significant positive correlation with cardiac risk indices. IL-6 was positively correlated only with AIP while correlation of uric acid with these indices was insignificant. In case of diabetic patients, the cardiac risk indices were significantly correlated with adiponectin, IL-6, CRP, fibrinogen and uric acid. The correlation with adiponectin was negative.

**Conclusions:** The altered atherogenic indices and their significant association with inflammatory markers signify the direct association of inflammation with CVD risks. Thus, there is requirement of novel approaches that can retard inflammatory responses and arrest unwanted cardiac health outcomes.

## A comparative study of angiotensin-2 and IL-23 in clomiphene citrate sensitive and resistant polycystic ovary syndrome.

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**Background:** Clomiphene citrate (CC) is the first line agent for ovulation induction in infertile women with polycystic ovary syndrome (PCOS); but around 30% of women with PCOS are resistant to CC treatment. Increased ovarian angiogenesis characterized by alterations in angiotensin-2 (Ang-2) levels is known to exist in PCOS. Moreover, chronic low-grade inflammation, with increased levels of pro-inflammatory cytokines like interleukin-23(IL-23) has also been reported in PCOS. Although these biochemical parameters are known to play a role in the pathogenesis of PCOS, their relationship with CC resistance in PCOS has not been explored. Objectives: To investigate whether angiotensin-2 levels are associated with inflammation and CC resistance in PCOS.

**Materials and methods:** 81 women diagnosed with PCOS and on treatment with CC were enrolled in the study. Ang-2 and IL-23 were analysed in subjects who are sensitive and resistant to CC treatment.

**Results:** Ang-2 was significantly decreased( $p=0.018$ ) while body mass index (BMI) ( $p=0.049$ ) and duration of infertility ( $p=0.006$ ) were significantly increased in CC resistant PCOS women compared to CC sensitive. In CC resistant PCOS, IL-23 predicts reduction in Ang-2 levels ( $p=0.010$ ). Among Ang-2, IL-23, BMI and duration of infertility, we found that Ang-2( $p=0.020$ ) and duration of infertility ( $p=0.036$ ) can predict resistance to CC therapy in PCOS.

**Conclusion:** We conclude that reduced Ang-2 levels predict CC resistance in women with PCOS.

## Do we need to reboot medical education one more time? Medical Students and Teachers perspective

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**Background:** Artificial intelligence (AI) is now gaining momentum in health care. Today, AI is being piloted in health care for faster and accurate diagnosis, to augment radiological findings, reduce errors, decrease medical costs, assist and replace repetitive tasks, minimally invasive surgery and many more. A gap exists between technology-enabled innovations and patient-centered care givers.

**Aims and objectives:** To assess the knowledge of students and teachers, to measure their attitudes regarding currently used Artificial intelligence in healthcare system.

**Materials and methods:** We conducted a questionnaire-based study amongst students and teachers of different subspecialties. The questionnaire had questions related to the knowledge of Artificial intelligence, its availability in medical field, and participants attitudes and concerns towards it.

**Results:** There was a significant association between younger age groups and comfort using the technology (0.04). In all, (94%) had previously heard of AI, and the majority (72%) agreed with its introduction into medical field. Almost 57% would like our students to have the ability to take perspective on AI and its methods. Majority commented that now is a good time to re-evaluate the practice of teaching Artificial Intelligence in our healthcare system.

**Conclusion:** This study revealed that the majority of participants supported the use of AI in medical field. Its implementation in clinical practice will rapidly evolve together with other fields of precision medicine, genomics and teleconsultation. Medical professionals were of the belief that they need to be adequately trained in this new technology. Artificial intelligence is poised to be the engine that drives improvements across the healthcare system.

## Case-based learning of Biochemistry to enhance diagnostic and clinical reasoning skills in interns – An experimental study

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**Background:** Basic sciences are the foundation to learn pathophysiology of any disease. Observed clinical rounds show decreasing use of scientific reasoning and diagnostic skills among interns. Hence refreshing their basic science skills probably will improve their scientific reasoning and hence better management of patients.

**Aims:** Does reinforcing Biochemistry concepts through case-based learning during internship improves their diagnostic and clinical reasoning skills.

**Objectives:** To compare the pre and post test scores of cases based MCQs in interns taught with case-based learning (CBL) methods and the control group.

**Materials and methods:** Target population: Interns of batch 2013-14. Sample size: 20 interns in both the study and control group. Stratified sampling technique was used. Study design: Interventional. Data Collection: Case based learning session was conducted for the study group after assessing pre-test score. Post test score was compared to the scores obtained by the control group. Statistical Analysis: Paired and Unpaired t tests were applied to check the significance of the results.

**Results:** The comparison of marks scored in pre and post-test in both case and control group. The scores were also compared between study and the control group. The study group ( $p=0.0001$ ) showed significant improvement in percentage of marks scored in post-test compared to the pre-test. The improvement in the intervention group was highly significant ( $p=0.0001$ ) compared to the control group.

**Conclusion:** Reinforcement of Biochemistry knowledge through case-based learning in interns resulted in improving the scientific reasoning skills. This approach can be used to teach basic biomedical sciences in the context of clinical application across the medical curriculum.

## Serum adiponectin levels and its association with body mass index.

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**Background:** Obesity, particularly central obesity, is a well-known risk factor for cardiovascular disease (CVD) and may be partly attributed to the dysregulation of inflammatory molecules secreted from adipose tissue (adipokines). Adiponectin, an adipokine abundantly produced and secreted by adipose tissues and widely recognized for its antidiabetic, anti-inflammatory, antiatherogenic, and cardioprotective effects. Several studies show that the adiponectin was significantly less in obese subjects.

**Aims and Objectives:** The aim of the study was to find the association between serum adiponectin and body mass index.

**Materials and Methods:** In this study 80 volunteers were included. Fasting blood samples were taken. Height, weight and waist circumference were recorded. Serum adiponectin is estimated by ELISA.

**Results:** The mean adiponectin value in obese/ overweight was found to be  $138 \pm 39.14$  ng/ml and in normal weight was  $208.9 \pm 42.04$  ng/ml with a p value: 0.0011. Statistical analyses were done by SPSS-20 software. This shows the adiponectin value is significantly low in overweight/ obese subjects than in normal healthy subjects.

**Conclusion:** Adiponectin is seen to be a protective adipokine which is negatively correlated with body mass index. Adiponectin could have important clinical benefits in terms of development of therapies for the prevention and or for the treatment of obesity and obesity related diseases.

## Screening of Gestational Diabetes Mellitus by using Glycated Albumin in Indian pregnant women

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**Background:** Gestational diabetes (GDM) is one of the pregnancy complication associated with adverse maternal and foetal outcomes including an increased risk for type 2 diabetes and cardiovascular disease later in life in mothers and an increased risk for macrosomia and obesity in offspring.

**Objective:** The main objective of our study was to compare the diagnostic performance of glycatedalbumin (GA) to HbA1c, and fasting plasma glucose (FPG) for the diagnosis of GDM. Methods: Women at their first trimester seen from October 2018 to April 2020 were studied visiting OBG OPD, NIMS hospital, Jaipur. GDM was diagnosed based on oral glucose tolerance test results, and GA and HbA1c were measured at the same time. Patients were divided into two groups (with and without GDM), and areas under the receiver-operating characteristic curves (AUCs) were calculated to determine the diagnostic value of GA, HbA1c, and FPG.

**Results:** A total of 115 women were included, of which 36 (37.9%) had GDM. Overall, FPG had the highest AUC for the detection of GDM and was significantly higher than that of GA (0.682 vs. 0.548,  $p < 0.001$ ) and HbA1c (0.662 vs. 0.629,  $p = 0.014$ ). The AUC of FPG was significantly greater than that of GA and HbA1c.

**Conclusion:** These results do not support the use of GA as a screening tool for GDM

## Redefinition of Dyslipidemia based on Apoproteins and Apo B/Apo A-I Ratio in normolipidemic patients

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**Background:** ApoB/ApoA-I ratio represents the balance between ApoB-rich potentially atherogenic cholesterol particles and ApoA-I-rich antiatherogenic cholesterol particles. Studies on apoproteins demonstrated for and against or least complementary to LDL-C in identifying the Cardiovascular risk among asymptomatic subjects. Despite normolipidemia, the subjects with the unfavorable ApoB/ApoA-I ratio had more atherogenic lipid profile, so this study was conducted. Objectives: To study the conventional lipid profile and Apoprotein B and A-I assay in the apparently healthy normolipidemic adults.

**Materials and Methods:** A cross sectional analytical study done in 105 volunteered adults attended health check-up. Detailed medical history, clinical examination done, and fasting blood samples was taken for Apoproteins (Immunoturbidimetry assay) and lipid profile analysis in automated biochemistry analyser.

**Results:** There were 59 males and 46 females of age 23–68 years. On comparison the mean of ApoB/ApoA1 ratio, Triglyceride, HDL-C and TC/HDL-C among both the gender was significant (p < 0.05). 110 subjects was statistically significant (p < 0.05) (accepted cardiovascular disease risk) was 16%. 12/17 of them showed near optimal with LDL-C < 130mg.

**Conclusion:** Apo B/Apo A-I ratio showed a positive association and behaved as a risk marker better than TC, Triglycerides, LDLC levels especially in asymptomatic patients. So, a redefinition of dyslipidemia based on Apoprotein ratios in subjects with normolipidemia can be considered as a sensitive marker of Atherogenic risk.

## Diagnostic role of Carcinoma Antigen-125 and Human Epididymis protein-4 in differentiating malignant and benign ovarian tumours

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**Background:** Ovarian cancer is one of the most lethal of all gynecologic malignancies. A major reason of high mortality is delayed detection of ovarian cancer usually in the advanced stage of disease. Symptoms of epithelial ovarian cancer are nonspecific in early stage. Early detection of ovarian cancer and its differentiation as benign or malignant can result in mortality reduction and long term disease control. Ultrasound has a very low specificity for determining whether a mass is benign or malignant. Doppler ultrasound has a better specificity but its performance varies amongst different operators. Other diagnostic tools like FNAC or biopsy involve invasive procedure.

**Aims and objectives:** The study aimed to evaluate the diagnostic role of Carcinoma Antigen-125 (CA-125) and Human Epididymis protein-4 (HE4) in discriminating ovarian cancer from other benign ovarian tumors.

**Materials and methods:** Clinically suspected female patients of benign and malignant ovarian tumor (n = 40 each group) were enrolled for the study. Patient with concomitant diseases such as chronic heart failure, chronic liver or renal disease, on chemotherapy and/ or radiotherapy and pregnant females were excluded. Overnight blood samples were collected and analyzed for CA-125 and HE4.

**Results:** Mean serum CA-125 ( $P < 0.0001$ ) and HE 4 ( $P < 0.0001$ ) levels were observed to be significantly higher in the malignant tumor group as compared to benign tumor group. A strong positive correlation ( $r = 0.925$ ) was also observed between the two parameters.

**Conclusion:** Early diagnosis of ovarian malignant tumors can serve as a major factor in improving the survival rate of patients. CA 125 and HE4 assay can serve as non-interventional diagnostic tools for differentiating between benign and malignant ovarian tumors.

## Role of Serum Hypoxia inducible factor 1 alpha, Matrix Metalloproteinase-9 and Copper as Angiogenic Biomarkers of Dysfunctional Uterine Bleeding

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**Background:** Disturbed endometrial angiogenesis plays a role in the mechanism of Dysfunctional uterine bleeding (DUB). Under hypoxic conditions, Hypoxia inducible factor 1 alpha (HIF-1) rapidly accumulates and activates angiogenic growth factors, receptors and extracellular proteases such as matrix metalloproteinases (MMPs) like MMP-9. Copper influences the production of number of angiogenic factors.

**Aims & Objectives:** To estimate and compare serum HIF 1, MMP-9 and Copper in DUB cases and in controls with normal menstruation.

**Materials & methods:** The study was performed at Department of Biochemistry, Kasturba medical college & hospital, Manipal. Ethical committee clearance was obtained. 40 DUB cases and 40 subjects having normal menstruation were included as controls. Informed consent was obtained. DUB was diagnosed based on history and ultrasonography. Serum HIF 1 and serum MMP-9 were estimated by using ELISA method, Serum Copper by using 3, 5-dibromo-2-pyridylazo-N-ethyl-N-3 sulphopropylaniline. Statistical analysis was done using SPSS 16. Results: We found increased HIF 1 (ng/mL) in cases compared to controls, decreased MMP-9 (pg/mL) in cases compared to controls. Serum copper levels in cases were significantly increased compared to controls. There was significant positive correlation between serum MMP-9 and HIF 1 in cases. No significant correlation was found between any other parameters.

**Conclusion:** Our study found significantly increased serum HIF 1, decreased serum MMP-9 and elevated serum copper in cases compared to controls. Hence serum levels of HIF 1, MMP-9 and Copper can be used as early noninvasive biomarkers of DUB.

## Study the correlation of iodine nutrition and autoimmunity among Euthyroid goiter patient in a tertiary care hospital in Tamil Nadu

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**Background:** Iodine is an essential micronutrient for the thyroid hormone synthesis. It is crucial for the growth and development of human life. Deficient or excessive iodine intake may affect thyroid gland size and functions. Despite the intake of iodized salt, the increasing occurrence of thyroid disorders in India.

**Aim and Objective:** Aim of the present study is to analyse the nutritional status of iodine among Euthyroidgoiter patient by measuring urinary excretion and correlate with thyroid hormone and auto antibodies.

**Materials and Methods:** one hundred and fifty Euthyroidgoiter patients and one hundred and fifty age-matched normal adult were included in study. Urinary Iodine excretion and serum TSH, fT4, fT3, AMA and ATG were estimated were estimated for case and control groups.

**Results:** The mean urinary iodine excretion concentration (UIC) in Euthyroidgoiter patient was 244.39 µg/L and excess urinary iodine excretion was found in 48%. There were elevated serum AMA levels in Euthyroidgoiter patient and that positive correlated with excess iodine.

**Conclusion:** In this study we found that excess urinary iodine excretion among patients. This study we observed iodine excess associated complications, viz., benign goiter (49%), thyroiditis (24%), cancer of thyroid (21%) and thyrotoxicosis (6%).

## Potential role of serum megalin as a biomarker of cardiovascular disease in type-2 diabetes mellitus

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**Background:** Cardiovascular disease contributes to the majority of mortality in type-2 diabetes mellitus. The alterations in lipid parameters pose an important threat to cardiovascular disease risk. Megalin is an endocytic receptor present in the apical surfaces of cells for internalising various ligands. Its role in dyslipidemia has been studied in different population. However their roles in diabetes mellitus and association with lipid profile parameters have not been explored. Aims and objectives: The aim of the research is to study the serum megalin levels of type-2 diabetic individuals with and without cardiovascular disease and correlate parameters of lipid profile with megalin levels.

**Materials and methods:** This was a case-control study conducted in a tertiary health care centre. After obtaining clearance from the Institutional Human Ethics Committee, a study population of 80 diabetic individuals (40 with cardiovascular disease and 40 without cardiovascular disease) was included. Details such as age, gender, oral hypoglycaemic agents, fasting plasma glucose levels, lipid profile parameters were collected. The leftover samples were used for serum megalin estimation by ELISA (Enzyme Linked Immunosorbent Assay). All laboratory parameters were estimated using dedicated kits and reagents in auto-analyzers.

**Results:** The serum megalin levels among cases were  $0.91 \pm 0.04$  ng/L and controls were  $0.64 \pm 0.13$  ng/L and the difference was not statistically significant (p value 0.42). There was significant negative correlation for serum megalin levels and total cholesterol and LDL-c levels.

**Conclusion:** Serum megalin may serve as a potential cardiac marker in diabetes mellitus patients.

## Status of monovalent ions in clinically euthyroid type 2 diabetics – a study with reference to gender based and anthropometry specified in South Indian Population

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**Background:** Diabetes mellitus (DM) is a multifactorial metabolic disorder. DM exerts mutual influence over cations and anions in the system, which governs the electrolyte balance as well as imbalance. Controversy still exists as regards the hypo and hyper natremia with associated, underlying condition in DM.

**Aim & Objectives:** The aim of the study is to primarily determine the status of commonly estimated serum electrolytes in insulin resistance (IR) and euthyroid type 2 diabetics. To assess electrolyte status in clinically euthyroid type 2 diabetics, to find out the association between IR and serum electrolytes in male and females. Moreover, to determine any gender specific, anthropometry related changes are perceptible in IR, as related to the clinically euthyroid status in diabetic male and female.

**Materials and Method:** It is a comparative study, conducted by the Department of Biochemistry, at a tertiary care hospital, Puducherry, between the periods of January 2018 to June 2018. A total of 128 patients (Male 64 & Female 64 with anthropometric specified) were included in this study. Blood samples of all patients were evaluated for glycated hemoglobin (HbA1c), Homeostatic model assessment for insulin resistance (HOMA-IR), serum sodium (Na), potassium (K), chloride (Cl) along with T3, T4 and TSH.

**Results:** Glycated hemoglobin (HbA1c) was found to be negatively correlated with sodium ( $p=0.007$ ) and T3 positive association ( $p=0.024$ ) in male overweight type 2 diabetic patients as compared with obese male type 2 diabetics, HOMA-IR negatively associated with chloride ( $p=0.036$ ). In non obese female T4 and HOMA-IR has negative and positive correlation with  $K^+$  ( $p=0.048, 0.004$  respectively), whereas in overweight HOMA-IR<sup>-</sup> has negative association with  $Cl^-$  ( $p=0.029$ ) and female HbA1c has strong positive association with  $Cl^-$  ( $p<0.001$ ) and T3 with  $K^+$  has high negative correlation ( $p=0.024$ ).

**Conclusion:** Our study demonstrates that there are variations in the electrolyte profile that is gender specific as well as within the anthropometry specified subgroups.

## Association of Serum Hyaluronic acid, COMP and Osteocalcin level with traditional biomarkers in early rheumatoid arthritis patients

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**Background:** This study was aimed to measure the serum levels of Hyaluronic acid (HA), Cartilage oligomeric matrix protein (COMP) and osteocalcin in early rheumatoid arthritis (RA) patients along with other traditional markers of RA patients.

**Materials and Methods:** It was a cross-sectional study involving 75 early RA patients based on the 1987 American College of Rheumatology criteria for the diagnosis of RA and 38 age and sexmatched healthy controls. Clinical examination was performed on RA patients, and traditional markers to measure the disease activity such as Disease Activity Score (DAS)28, Visual Analog Score (VAS), Creactive protein (CRP), erythrocyte sedimentation rate (ESR), anticyclic citrullinated peptide (CCP), and rheumatoid factor (RF) were assessed. Serum HA, COMP and osteocalcin level was measured using ELISA method. All the values were expressed as median (25th–75th percentile).

**Results:** In our study, there was a significant increase in serum HA level in RA patients (74.59 (29-176.4) ng/ml) compared to healthy controls (54.58 (35.63-81.68) ng/ml) with  $p < 0.03$ . There was no significant difference in serum COMP and osteocalcin levels among early RA patients and healthy controls. The traditional inflammatory markers such as ESR, CRP, and measures of disease activity such as DAS28 and VAS were significantly increased in early RA patients than controls with ( $p < 0.001$ ). Serum Hyaluronic acid levels were significantly correlated with traditional markers such as anti-CCP and disease activity measures such as DAS28, CRP, and ESR in RA patients.

**Conclusion:** Serum Hyaluronic acid level was significantly higher in early RA indicating involvement of synovium in early stages of RA. Even though there was no significant increase in COMP and osteocalcin level in early RA, there is definite involvement of these markers in the pathogenesis of rheumatoid arthritis.

## A study on clinical correlation between urinary iodine and subclinical hypothyroidism

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**Background:** Iodine is an essential raw material for thyroid hormone synthesis. Excess iodine intake may also lead to thyroid dysfunction as iodine exerts some effects on the normal and the sick thyroid gland.

**Aim:** To study the correlation between urinary iodine and subclinical hypothyroidism. Objective: 1) To compare UIC among SCH patients. 2) To report significant deviation if any in the selected group of individuals.

**Material and Methods:** Study Period: 1 year. It was an observational cross-sectional Study. 100 individuals were selected as between the age of 25-50 yrs. being treated as study subjects based on predefined enrolment criteria. 50 cases (Newly Diagnosed SCH Patients without any associated comorbidity) & 50 control (healthy individuals). Place of study: Dept. of Biochemistry & Dept. of Endocrinology, IMS & SUM Hospital, Bhubaneswar. UIC, TSH and freeT<sub>4</sub> were measured in all study subjects.

**Result:** The levels of urinary iodine were significantly higher in patient with SCH as compared with control subjects ( $326.97 \pm 112.98$  vs.  $274.45 \pm 98.75 \mu\text{g/l}$ ,  $p < 0.01$ ).

**Conclusion:** From this study, a possible link between increased iodine intake and SCH was found.

## Assessment of cardiovascular risk in hypertensive patients

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**Background:** Among the non-communicable disease, CVD is one of the major reasons of mortality all over the world. Hypertension is an important contributor to cardiovascular disease, stroke and Renal disease. Atherogenic Index of Plasma (AIP) is commonly used as an indicator of dyslipidaemia to assess the cardiovascular risk.

**Aim:** To assess the cardiovascular risk in hypertensive patients.

**Objective:** 1) To compare lipid profile status (AIP) among hypertensive patients. 2) To report significant deviation if any in the selected group of individuals.

**Materials & Methods:** Study Period: 1 year. Study Design: Observational Cross-sectional Study. 100 individuals were selected as study subjects based on predefined enrolment criteria. 50 cases (Newly Diagnosed Hypertensive Patients without any associated comorbidities) & 50 controls (Normotensive Healthy Individuals). Place of study: Medicine OPD, IMS & SUM Hospital, Bhubaneswar. Blood pressure & serum lipid profile was measured in Biochemistry lab by COBAS integra 400+ autoanalyzer and the AIP (log TG/HDL-c) was calculated.

**Results:** The study population belonged to 25 to 45 yrs of age group. The mean age of hypertensive patients was  $40.78 \pm 4.00$  yrs and that of controls was  $39.58 \pm 4.12$  yrs. The mean serum TG ( $205.24 \pm 56.74$  mg/dl) in hypertensive patients was significantly higher than those of controls whereas mean HDL-C level ( $42.10 \pm 12.27$  mg/dl) in hypertensive patients were lower than those of controls. The mean AIP in the hypertensive patients was ( $0.68 \pm 0.19$ ) significantly higher ( $p < 0.001$ ) than that of controls ( $0.43 \pm 0.22$ ).

**Conclusion:** From this study, it can be concluded that, hypertension associated with high AIP possess higher risk of CVD.

## Cord blood levels of uric acid and lipid profile in pregnancy induced hypertension.

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**Background:** Cardiovascular diseases (CVD) is a major global health burden that results in the greatest number of deaths worldwide. Serum uric acid is a strong predictor of stroke, coronary artery disease and metabolic syndrome. Maternal hyperuricemia in normotensive singleton pregnant woman is significantly associated with preterm and SGA delivery and the development of neonatal Intraventricular hemorrhage.

**Aim and objective:** 1. To evaluate and determine the association between the uric acid and lipid profile parameters in cord blood of newborns of PIH mothers.

**Materials and Methods:** The analysis is done with 100 patients with 50 each in two groups. After considering inclusion and exclusion criteria, 3ml cord blood is collected and estimation of uric acid and lipid profile using enzymatic and colorimetric method is done using Cobas Intergra 400 plus system.

**Results:** The mean uric acid level in the hypertensive were  $5.64 \pm 0.53$  as compared to  $3.20 \pm 0.610$  among controls ( $p < 0.05$ ). Similarly there was a significant mean difference in Total cholesterol, triglycerides, HDL and LDL between the two groups. It was observed that there was significant positive correlation between uric acid and total cholesterol in both control and case group, however the correlation was more strong amongst the cases ( $r = 0.74$ ) as compared to controls ( $r = 0.52$ ) and the correlation were statistically significant in both groups ( $p < 0.05$ ). Uric acid and HDL showed a negative correlation amongst cases. Uric acid and LDL showed positive correlation amongst cases.

**Conclusion:** Cord blood HDL cholesterol levels are deranged in newborns born to PIH mothers due to hyperuricemia. This study has lightened the risk of occurrence of coronary heart diseases in the later stages of life.

## Hormonal studies in nodular goitre

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**Background:** Thyroid dysfunction is more common in females when compared to males. We performed a case control study in female patients with goitre who attended surgery outpatient department at Vinayaka Mission's Medical College and Hospital.

**Aims and objectives:** Estimation of thyroid hormones in patients with goitre. Analysis of anti-TPO antibody in patients with goitre.

**Materials and Methods:** The study was conducted for a period of four months. It included 25 cases and 25 age and sex matched controls. The inclusion criteria for the study were (i)Female gender, (ii)age between 30 and 60 years, (iii)clinically identified and symptomatic cases. Exclusion criteria were patients with symptoms of hyperthyroidism like loss of weight, heat intolerance, hyperhidrosis, nervousness, tremor, palpitations and tachycardia. Parameters analysed are Anti-TPO, TSH, free T4, free T3, total T4 and total T3. Serum samples were stored at 8degree celciuswitin 2 hours after venepuncture. The analysis was done by robonik ELISA reader.

**Results:** The highest TSH value recorded in test group was 3.5 lu/ml and the lowest value was 0.03 lu/ml. The highest anti-TPO value recorded in test group was 545 lu/ml and the lowest value was 481lu/ml.On analysing and comparing Total T3,Total T4,Free T3,Free T4,TSH and Anti-TPO values among the two groups ,all of the paramaters except free T3 were statistically significant.

**Conclusion:** Measurement of TSH alone is of cost benefit to the patient and can give a clue on thyroid disorder present. Patients with high levels of anti-TPO are at high risk and frequent follow up has to be done.

## Estimation of Biochemical Markers in Differential Diagnosis of Meningitis in a Tertiary Care Hospital

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**Background:** Meningitis is a clinical syndrome characterized by inflammation of the meninges. The most common cause of meningitis is infections due to viruses, bacteria, mycobacterium, fungi & other organisms. If not recognized earlier, it can lead to serious long-term neurological sequel like deafness, epilepsy, hydrocephalus and cognitive deficits.

**Aims and Objectives:** Our aim was to evaluate the cerebrospinal fluid- ADA, LDH, Glucose & Protein in differential diagnosis of meningitis.

**Materials and Methods:** Total of 60 Meningitis Patients out of which 26 Tubercular, 18 Bacterial & 16 Viral Meningitis were analyzed on the basis of data from the initial clinical examinations.

**Results:** Increase level CSF-ADA was found in Tubercular meningitis as compared to bacterial & viral meningitis. Increase level CSF-LDH & protein were found in bacterial meningitis as compared to Tubercular & viral meningitis whereas decrease level of CSF-glucose in bacterial meningitis as compared to tubercular meningitis while normal level in viral meningitis.

**Conclusion:** We conclude that, the CSF-ADA, LDH, Glucose & protein may sensitive biochemical markers for diagnosing and differentiating meningitis. CSF- ADA was higher in patients with tubercular meningitis as compared to bacterial and viral meningitis and LDH activity was higher in patients with bacterial meningitis as compared to tubercular and viral meningitis. CSF-glucose was very low and CSF-protein were very high in both bacterial and tubercular meningitis as compared to viral meningitis.

## A study on GTT practices in a tertiary care hospital

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**Background:** Glucose tolerance test has many different recommendations for standardized oral glucose loads, ranging from 50 to 100 g. The main reason for the dilemma in using GTT is the large number of procedures proposed. In this context we decided to study the different types of glucose tolerance tests practiced in our hospital, their indications, interpretations and the guidelines followed.

**Aims & Objectives:** To audit the different GTT procedures practiced in our hospital.

**Materials & Methods:** Institutional human ethics committee approval was obtained and structured interview was conducted with the clinicians using Glucose tolerance tests and test request forms (TRF) were also analyzed for one month and data was analyzed using Microsoft Excel.

**Results:** In most of the TRFs (95%), the glucose load was mentioned as 75g. In 5% cases the load was not mentioned. Out of 217 tests performed 56 were Glucose Challenge Test (GCT) – 75 g load was given irrespective of fasting and 2 h sample analyzed for glucose and 161 were Oral Glucose Tolerance Test (OGTT) after 10h fasting 75g of glucose load was given.

**Conclusion:** There has been a miscommunication between clinician prescribing GTT and the laboratory. So, TRF has to be revised for the test to be done accurately.

## Evaluation of Lipid Profile, Malondialdehyde (MDA) and Advanced Oxidation Protein Products (AOPP) in Post Menopausal Women in a Tertiary Care Hospital.

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**Background:** Menopause is a natural process in the ageing of a women & it denotes the end of reproductive capacity which manifests as cessation of cyclic ovarian function and cyclic menstruation. The various hormonal changes associated with menopause on the serum lipids play an important role in most cardiac problems in this period. Oxidative stress is associated with damage to all biomolecules that can lead to a critical failure of biological functions and, ultimately, cell death.

**Aims and Objectives:** Aim of the study was to evaluate lipid Profile, AOPP and MDA levels in pre and postmenopausal women.

**Materials and Methods:** Total 72 pre and post menopausal Women between the age of 30 to 60 years were enrolled in the study and They were divided into two groups- 36 Pre-menopausal Women and 36 Post menopausal women.

**Results:** Significance increased of total cholesterol (TC), triglyceride (TG), low density lipoprotein cholesterol (LDL-c), malondialdehyde (MDA) and advanced oxidation protein product (AOPP) level in post menopausal women as compared to pre menopausal women while high density lipoprotein cholesterol (HDL-c) was reverse.

**Conclusion:** Increased level of lipid profile, malondialdehyde & advanced oxidation protein product, suggesting they can be used as markers for cardiovascular risk in post menopausal women.

## Association of waist circumference with adiponectin and insulin resistance in non diabetic obese individuals

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**Background:** Waist circumference (WCF) the best anthropometric indicator of central obesity is closely associated with insulin resistance (IR) and provides a rapid inexpensive and non-invasive way of identifying the presence of insulin resistance. Adiponectin exclusively secreted from adipocytes has anti-atherogenic, anti-inflammatory and insulin sensitizing properties. Raised subcutaneous and visceral fat in abdominal obesity lowers adiponectin secretion.

**Aim and objectives:** To find the association of waist circumference with adiponectin, fasting serum insulin, HOMA IR and FBS.

**Material and methods:** Forty-three obese individuals in the age group of 20-45 years and equal number of age and sex matched controls were included in the study group. Subjects having pregnancy, chronic diseases like diabetes, hypertension kidney disease, liver disease, or on any medications, alcoholics and smokers are excluded. Fasting Insulin is measured in ROCHE Cobas e411. Serum adiponectin is assayed by Systronic ELISA Reader 641.

**Results:** WCF ( $91.06 \pm 5.59$ ) in cases is higher than controls ( $77.46 \pm 7.61$ ), fasting serum insulin ( $19.71 \pm 14.02$ ) in cases is higher than controls ( $6.53 \pm 2.27$ ) HOMA IR ( $5.54 \pm 4.12$ ) in cases is higher than controls ( $1.32 \pm 0.29$ ) and FBS ( $104.04 \pm 12.20$ ) are higher in cases than control ( $92.34 \pm 6.82$ ) which is statistically significant whereas serum adiponectin level in control ( $8.10 \pm 2.98$ ) is higher than cases ( $2.35 \pm 0.77$ ) which is statistically significant. A statistically significant negative correlation is observed between WCF and adiponectin ( $r = -0.875$ ,  $p < 0.01$ ) whereas a statistically positive correlation of WCF is observed with serum insulin ( $r = 0.744$ ,  $p < 0.01$ ) HOMA IR ( $r = 0.879$ ,  $p < 0.01$ ) and FBS ( $r = 0.877$ ,  $p < 0.01$ ).

**Conclusion:** Increase in WCF is associated with decrease in serum adiponectin and increase in IR so decrease in insulin sensitivity develops. So measuring WCF can be a simple tool to assess IR and can be routinely done to identify risk of type 2 DM.

## Evaluation of serum leptin concentration and insulin resistance in Polycystic ovarian syndrome in Southern Odisha

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**Background:** Polycystic ovarian syndrome (PCOS), one of the most common disorder of premenopausal women, involves menstrual disturbance, chronic anovulation and hyperandrogenism. Obesity is common in more than half women population with PCOS. Obesity in PCOS leads to higher prevalence of insulin resistance and hyperinsulinemia. Leptin, the product of ob gene, is protein secreted from adipose tissue. Some studies suggest the role of insulin in the regulation of circulating leptin is obscure. To find out association between obesity, PCOS and hyperinsulinemia, we conducted a study in 60 PCOS women as case & 30 age matched healthy controls.

**Aims and Objective:** To evaluate serum leptin and insulin level and to find out the association between leptin concentration and insulin resistance in PCOS.

**Material and Method:** The blood sample were collected from the PCOS patient attending the O & G outdoor. The blood glucose was done in Toshiba TBA 120 FR and insulin done in Roche cobas e411 CLIA. BMI was calculated for the cases & control. The PCOS cases were divided into two groups as Lean PCOS and Obese PCOS according to BMI. The study was carried out in Dept of Biochemistry MKCG Medical College.

**Result:** Serum leptin levels were  $5.2 \pm 4.1$  and  $5.8 \pm 2.0$  and  $28.0 \pm 17.8$  ng/ml and serum insulin were  $10.5 \pm 1.5$  and  $10.7 \pm 1.6$  and  $29.1 \pm 17.1$  mU/L in controls and lean PCOS and obese PCOS subjects respectively which when compared are statistically significant. Leptin is positively correlated with BMI ( $r=0.832$ ,  $p=0.00$ ), and insulin ( $r=0.397$ ,  $p=0.008$ ) in cases and control.

**Conclusion:** This study shows that circulating leptin levels correlate with BMI and serum insulin in PCOS cases.

## Effect of Phototherapy on serum levels of calcium and magnesium in term neonates with hyperbilirubinemia

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**Background:** Neonatal Hyperbilirubinemia is defined as total serum bilirubin above 5mg/dl. Hyperbilirubinemia is one of the most prevalent conditions in neonates. Approximately 60 % of term neonates presents with jaundice during first week of life. Physiological jaundice is the most common cause of neonatal jaundice. Phototherapy plays a role in the treatment of hyperbilirubinemia. However, it may lead to complications like hyperthermia, dehydration, hypocalcemia& hypomagnesaemia.

**Aims and objectives:** To study the effect of Phototherapy on serum calcium and Magnesium levels in term neonates with hyperbilirubinemia receiving phototherapy and to evaluate the incidence of Hypocalcaemia and Hypomagnesaemia in term neonates receiving phototherapy. **Materials and Methods:** Cross sectional study conducted at neonatal ICU Mahatma Gandhi Memorial Hospital, Trichy. From 1<sup>st</sup> September 2019 to 31<sup>st</sup> January 2020. A total of 45 term jaundiced neonates receiving phototherapy were included in the study. Gestational age, duration of jaundice and duration of phototherapy were noted. 2ml of blood sample was taken from neonates before and after receiving phototherapy and the Total serum Bilirubin, serum calcium levels and Magnesium levels were measured.

**Results and Conclusion:** Mean gestation age at the time of birth was 37 weeks. Mean age of the neonates was 4.75 days. Mean duration of Jaundice was 2.6 days. Serum calcium levels before and after 48 hours of phototherapy was 9.57 mg/dl and 8.97mg/dl respectively. Serum Magnesium levels before and after 48 hours of phototherapy was 2.14 mg/dl and 1.9 mg/dl respectively. Hypocalcaemia and Hypomagnesaemia was observed in 23 out of 45 (51%) neonates after receiving 48 hours of phototherapy.

## A study of turn around time of stat creatinine in a tertiary care hospital

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**Background:** In our tertiary care medical college hospital, we do STAT creatinine in the central laboratory trying to combine the low-cost high-performance enzymatic method and short turnaround time of STAT testing. In 'STAT Creatinine' immediate attention is given to the sample and it is processed by the instrument in STAT mode which will bypass all existing queue. In this context, we did an audit of STAT creatinine testing.

**Aims and objectives:** Aim of the study is to analyze the Turnaround Time TAT of STAT Creatinine

**Materials and methods:** Institutional human ethics committee approval was obtained and requisition forms of STAT creatinine were collected from our clinical biochemistry lab. Turnaround time and other datas were collected using HIS. Data collected was documented in Microsoft excel.

**Results:** During the two-month study period, we had 18 STAT-Creatinine. 2. In all request forms 'STAT' was mentioned. 3. In 11/18 request forms the intercom number of the requester were not mentioned. 4. The turnaround time of 30minutes is exceeded in 3/18 cases.

**Conclusion:** STAT Creatinine assay has been ordered for all patient requiring radiological study with contrast. Central laboratory can give result within 30 minutes by accurate and precise enzymatic assay. The process improvement shall be formulated and implemented to achieve a TAT of 20 minutes.

## A Study on Liver Function Tests in CRP elevated Covid-19 positive

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**Background:** Coronavirus disease 2019 (Covid -19) has rapidly become the most severe public health issue worldwide. Despite pneumonia and pulmonary damage being the primary, liver dysfunction has also been observed in approximately half of hospitalized patients with incompletely understood underlying pathogenesis. C-reactive protein (CRP) is an acute phase reactant protein, predominantly secreted from the liver in response to infection and inflammation. Hence, we proposed this study, aiming to provide clues for the clinical diagnosis and management.

**Aim:** To study the status of liver function tests in CRP elevated Covid-19 positive patients. **Materials and Methods:** A retrospective observational study was conducted on 40 hospitalized COVID-19 positive adult patients who had elevated serum CRP. Serum CRP, Serum bilirubin - Total, Direct and Indirect, Serum Total protein, albumin, Globulin, Albumin Globulin ratio, Serum enzymes –AST, ALT, ALP and GGT are recorded and analysed.

**Results:** In our study, Percentage of participants having biochemical values within reference range for Serum bilirubin - Total, Direct and Indirect, Serum Total protein, albumin, Globulin, Albumin Globulin ratio, AST, ALT, ALP and GGT are 82.5%, 70%, 67.5%, 77.5%, 67.5%, 52.5%, 65%, 77.5%, 77.5% and 65% respectively.

**Conclusions:** In our study, liver parameters for more than 50 percentage of participants were within the reference intervals at the time of admission. It mandates serial liver parameters analyses to assess the liver injury.

## Serum aminotransferases and alkaline phosphatase levels in patients with Chronic kidney disease

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**Background:** According to Kidney Diseases Improving Global Outcomes (KDIGO), Chronic Kidney Disease (CKD) is defined as abnormalities of kidney structure or function present for more than three months. Hepatic diseases are common among CKD patients. Liver function tests particularly, serum liver enzymes play an important role in diagnosing and monitoring these patients. Serum aminotransferase levels commonly fall near the lower end of the reference range in CKD patients. High levels of serum alkaline phosphatase (ALP) can also occur. Hence, the recognition of liver damage in these patients is challenging.

**Aim of the study:** To compare the levels of serum aspartate aminotransferase (AST), alanine aminotransferase (ALT) and alkaline phosphatase (ALP) in patients with CKD and healthy controls.

**Materials and methods:** A retrospective study was conducted on 50 CKD patients with ESRD attending Nephrology OPD and 30 healthy controls. Serum AST, ALT, and ALP levels were recorded and statistically analyzed using SPSS software version 20.

**Results:** Our study showed that serum AST and ALT levels were significantly lower in patients with CKD compared to healthy controls ( $P = <0.001$ ). Serum ALP levels also found to be significantly higher in patients with CKD compared to controls ( $P = <0.001$ ).

**Conclusion:** Levels of serum aminotransferases were low in CKD patients with ESRD. Therefore, the use of standard reference values of aminotransferases to detect liver disease is less useful in patients with ESRD on chronic dialysis therapy. Thus, the study established the need for separate reference ranges of serum aminotransferase in patients with chronic kidney disease.

## **Assessment of matrix metalloproteinase – 9 levels in bipolar disorder patients on lithium monotherapy and combination therapy**

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**Objective:** To compare matrix metalloproteinase – 9 (MMP-9) levels in bipolar disorder patients on lithium monotherapy and combination therapy.

**Materials and methods:** 70 bipolar disorder patients on treatment with lithium and 70 age and gender matched controls were enrolled in the study. MMP-9 was estimated in all the subjects. Results: MMP-9 levels were significantly increased in patients with bipolar disorders compared to controls. In bipolar disorder patients, MMP-9 was significantly increased in patients who were on lithium monotherapy compared to those with lithium combination therapy.

**Conclusion:** MMP-9 can act as biomarkerto predict the success of lithium therapy in bipolar disorder patients.

## Matrixmetalloproteinase-9 gene polymorphism (rs 17576) increases the risk of depressive symptoms in bipolar disorder

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**Aims and Objective:** The objective of the study was to investigate genotype frequency and allele frequency of MMP-9 genetic variant (rs 17576).

**Materials and Methods:** 80 bipolar disorder patients and 80 age and gender matched controls were enrolled in the study. MMP-9 gene-typing and allele frequency were analysed in both the groups.

**Results:** The genotype and minor allele (G allele) frequency were not significant between bipolar disorder and controls. MMP-9 levels were significantly increased in bipolar disorder patients with AG ( $p < 0.001$ ) and GG ( $p = 0.022$ ) genotypes compared to controls. Bipolar disorder patients with GG genotype ( $p = 0.038$ , OR: 3.26 (1.16 – 9.09) and G (mutant) allele ( $p = 0.013$ , OR 2.03(1.18 – 3.48) confers increased risk of depressive symptoms.

**Conclusion:** We conclude that MMP-9 gene polymorphism (rs 17576,) is associated with the development of depressive symptoms in bipolar disorder

## Assessment of Organophosphate pesticides exposure in men with idiopathic abnormal semen analysis - A pilot study

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**Background:** Organophosphate (OP) pesticides are known to alter sperm concentration and quality.

**Aims and Objectives:** To compare OP pesticide exposure between men with and without idiopathic abnormal semen analysis and elucidate the association between semen parameters, urinary OP metabolites, plasma cholinesterase and acetylcholinesterase levels among men with idiopathic abnormal semen analysis.

**Materials and Methods:** Fifty men with idiopathic abnormal semen analysis were recruited as cases and 50 men with normal semen analysis were recruited as controls. OP pesticide exposure was determined by plasma cholinesterase and acetylcholinesterase levels and urinary OP pesticides metabolites i.e. dimethyl-phosphate (DMP), diethyl-thiophosphate (DETP), diethyl-dithiophosphate (DEDTP) by gas chromatography-mass spectrometry.

**Results:** Serum cholinesterase ( $5792.07 \pm 1969.89$  vs  $10267.01 \pm 3258.58$  IU/L,  $p = 0.006$ ) and acetylcholinesterase [ $102.90$  (45.88-262.74) vs  $570.31$ (200.24-975.30) IU/L,  $p = 0.001$ ] levels were significantly lower in cases as compared to controls. Cases had significantly higher percentage of urinary DAP positivity as compared to controls (80 vs 38%,  $p < 0.0001$ ). Out of the 80% cases with urinary DAP positivity, 25% cases had mild inhibition ( $4417 \pm 200$  IU/L) and 75% cases had normal plasma cholinesterase levels. After considering urinary DAP positivity and mild inhibition of serum cholinesterase, cases had significantly higher percentage of OP pesticide exposure as compared to controls (10 vs 2,  $p = 0.015$ ). Cases with OP pesticide exposure had significantly higher urinary DETP and DEDTP levels as compared to cases without OP pesticide exposure.

**Conclusion:** Men with idiopathic abnormal semen analysis had significantly higher OP pesticide exposure as compared to men with normal semen analysis.

## Correlation of fibrinogen level in preeclampsia

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**Background:** Preeclampsia is one of the most common medical complications of pregnancy associated with significant maternal and fetal morbidity and mortality. It is associated with a risk of abnormal hemostasis.

**Aim and Objectives:** The aim of this study is to measure the levels of plasma fibrinogen in preeclampsia patients and normal pregnant women and also to correlate the severity of preeclampsia with fibrinogen levels.

**Materials and Methods:** This case control study was done from January 2019 to January 2020 at Mahatma Gandhi Memorial Government Hospital, Trichy, 30 preeclampsia patients and 30 normotensive pregnant women (controls) were enrolled in the study. Both cases and controls were selected in the third trimester and belong to the age group of 19-30years.

**Results and Conclusion:** The results were presented as a Mean  $\pm$  SD and p value of less than 0.001 is considered as significant. In our study, it was noted that there was a statistically significant decrease in the plasma fibrinogen levels in pre-eclampsia patients compared to that of normal pregnant women (p value = 0.0001).

## Inflammatory markers in subclinical hypothyroidism.

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**Background:** Subclinical hypothyroidism is a condition in which there is Biochemical evidence of TSH elevated above the defined upper limit of the reference range with normal range of serum free T3 and free T4 levels, without any clinical symptoms of hypothyroidism. Out of all thyroid disorders, subclinical hypothyroidism contributes 9.4% which is 3 times higher than overt hypothyroidism (3.9%). Prevalence of subclinical hypothyroidism is higher in women (11.4%), than in men (6.2%). It is usually due to autoimmune thyroiditis and is typically associated with detectable anti-thyroid peroxidase antibodies (anti-TPO). Subclinical hypothyroidism most commonly results from Hashimoto's thyroiditis but may also be seen following postpartum thyroiditis. Subclinical hypothyroid patients with elevated anti-TPO have higher chance to develop overt hypothyroidism than those without and hence it is recommended that anti-TPO measurement should be an integral part of the investigation of subclinical hypothyroidism. High-sensitive C-reactive protein (CRP) is produced by the liver in response to inflammation. The serum High sensitive CRP concentration is also increased in most subclinical hypothyroidism and in postpartum thyroiditis. If anti-thyroid antibodies are positive, hypothyroidism occurs at a rate 4.3% per year versus 2.6% per year when anti-thyroid antibodies are negative.

**Aim:** Evaluation of the serum anti-TPO, serum high-sensitive CRP (hsCRP) concentration as markers of the inflammation in subclinical hypothyroidism.

**Methods:** The study group includes 24 subjects, of reproductive age group referred from the outpatient department of General Medicine, General Surgery, Obstetrics and Gynecology etc. presenting with one or few of the following symptoms such as fatigue, lethargy, dry and coarse skin, cold intolerance, hair loss, difficulty in concentration and poor memory, constipation, weight gain, dyspnea, hoarseness of voice, menstrual irregularities. The age group chosen is between 18 - 45 years. The control group includes 48, age and gender matched euthyroid subjects from the same population after getting consent from them for participation in this study. Informed consent will be obtained from both the study group and control group. CLIA and auto analyzer were used. It was a Single center, Prospective study.

**Inclusion criteria:** Age group: 18 -45 years both male and female subjects with recent onset of one or few symptoms of hypothyroidism.

**Exclusion criteria:** Those who are already on treatment for Thyroid disorders, Chronic diseases, Diabetes, Hypertension, CAD, Liver and Renal disorders, any acute illness, Pregnant women and people taking drugs altering thyroid function like Amiodarone, NSAIDS, Steroids, Antipsychotics like lithium etc.

**Results:** In this study the level of TSH Mean  $\pm$  SD (11.12 $\pm$ 4.17 vs 2.73 $\pm$ 0.80) and T3 Mean  $\pm$  SD (0.96 $\pm$ 0.17 vs 1.08 $\pm$ 0.26) were significantly higher (<0.001) in subclinical hypothyroidism. Serum concentration of FT4 was not significantly different between the groups. Total cholesterol, triglycerides, and LDL were significantly higher in patient's group. While the level of HDL-C was significantly lower in SCH patients compared to euthyroid group. TSH level was positively correlated with inflammatory markers in subclinical hypothyroidism, which were significantly different in subclinical hypothyroidism.

**Conclusion:** This study suggests that subclinical hypothyroidism patients have increased inflammatory markers along with dyslipidemia and due to that future risk of further development of cardiovascular disorder can occur. Level of inflammatory markers increases in patients as disease progress if left untreated.

## Study on biochemical analysis of factors involved in the pathogenesis of uterine fibroid disorder

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**Background:** Uterine fibroids are the commonest smooth muscle tumours that originate from the uterus. Several factors are involved in the pathogenesis like the reproductive hormones, age, family history, parity and race.

**Aims and objectives:** To analyze the biochemical parameters in fibroid cases and to compare the same with healthy study subjects.

**Materials and methods:** 45 uterine fibroid cases and 45 age matched controls were studied for their biochemical parameters lipid profile, liver function tests, complete blood count and blood grouping & typing.

**Results:** Patients with uterine fibroids had earlier age of menarche and first child when compared to normal subjects. They were anemic with low hemoglobin count Hb (gm %)  $8.6 \pm 2.12$  against controls  $10.8 \pm 3.1$ . Their HDL (mg/dl) was low with mean value  $40.4 \pm 5.9$  compared to control values ( $50.9 \pm 6.8$ ). In liver function tests, alkaline phosphatase (IU/L) was significantly elevated  $190.8 \pm 32.8$  IU/L when compared to the controls with mean value of  $110.5 \pm 24.5$  IU/L. Interestingly most of patients were found to have blood group B positive (62.22%).

**Conclusion:** Uterine fibroids are more common in the reproductive age group especially in women between 30-50 years of age. Most of the patients with fibroid are found to have blood group B type with Rh positive

## Evaluation of hematological changes in head and neck cancer patients

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**Background:** Cancer is a crucial health problem on a large scale that has become one of the main causes of death. Head and neck cancer are the term used to describe many different malignant tumors that develop in or around the larynx, throat, nose, mouth and sinuses. Alcohol, cigarette and betel, nut consumption increased the risks of oral cavity cancer.

**Aims & Objectives:** This present study was planned to evaluate haematological Profile in patients of head & neck cancer and compare to healthy subjects.

**Materials and Methods:** The study was conducted on 35 diagnosed cases of head & neck cancer. Age and sex matched healthy subjects (n = 35) constituted the control group. Blood samples were collected to analyse the hematological profile included Hemoglobin, RBCs, Platelets and WBC count using Beckman coulter LH 750. All variables were presented in the two groups as mean  $\pm$  SD and compared by applying Student's t-test.

**Results:** There is a significant difference in the levels of hematological parameters observed between the control and the Head & Neck cancer patients. Hemoglobin and RBC levels were significantly lower; WBC and platelets were higher in Head & Neck cancer patients compared to healthy subjects.

**Conclusion:** The present study showed relative changes in the hematological parameters of Head & Neck cancer patients when compared with healthy subjects. Although these variations do not serve as the only confirmatory tool in the diagnosis of cancer, yet they are very efficient indicators and can be used to identify cancer at the earlier stage

## A hospital based study of high- sensitive c-reactive protein and serum insulin in patient with subclinical hypothyroidism

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**Background:** Thyroid diseases, namely hypothyroidism constitute the most common endocrine abnormality in recent years diagnosed either in subclinical or clinical forms. Subclinical hypothyroidism is defined as an elevated serum TSH level associated with normal T4 and T3 values. The association between coronary heart disease and subclinical hypothyroidism is unclear. Inflammation is thought to play important role in the progression and complication of atherosclerosis. Circulating concentration of C- Reactive Protein (CRP) fluctuates widely during acute responses to tissue damage or infection.

**Aims and objectives:** The aim of the study was to determine high sensitive C reactive protein (HsCRP) concentration in subclinical hypothyroid cases and to compare them with those from control group.

**Material and Methods:** A cross sectional study was conducted in the department of biochemistry and medicine involving 70 patient with subclinical hypothyroidism (cases) and 70 healthy individuals (controls). HsCRp, thyroid hormones and insulin levels were estimated in both the groups.

**Results:** Serum HsCRP level in group with subclinical hypothyroidism were ( $5.86 \pm 1.49$  mg/l) higher than those in control ( $1.18 \pm 0.65$  mg/l) and the difference was statistically significant with p value  $< 0.0001$ . The fasting insulin level in the subclinical hypothyroid group was also higher than the control group.

**Conclusion:** Patient with subclinical hypothyroidism have high serum HsCRP, and insulin, level than healthy subjects. High HsCRP level and therefore low-grade inflammation may be associated with fasting hyperinsulinemia before obvious insulin resistance in patient with subclinical hypothyroidism.

**Keywords:** High sensitive C reactive protein, subclinical hypothyroidism,

## Simultaneous detection of 12 anticholinesterase pesticides in blood by gas chromatography – ion-trap mass spectrometry

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**Background:** Anticholinesterase pesticides like organophosphates and carbamates are commonly available insecticides in India. Misuse of these pesticides has proved toxic to humans owing to accidental or intentional exposure. Deliberate self-poisoning with pesticides can turn out to be potentially fatal.

**Aims and Objectives:** To optimize and validate a simple, accurate and sensitive gas chromatography – ion-trap mass spectrometry method for the determination of 12 anticholinesterase pesticides (monocrotophos, dimethoate, dichlorvos, azinphos-methyl, carbofuran, chlorpyrifos, dialifos, diazinon, malathion, methidathion, parathion, and terbufos) in blood. **Materials and Methods:** The determination of pesticides was performed after liquid-liquid extraction (LLE) by toluene/chloroform (4:1, v/v) of a 500mL blood sample in gas chromatography – ion-trap mass spectrometry. The LLE was tested for different solvent systems like toluene/ethyl-acetate, toluene/chloroform, toluene/chloroform, toluene/chloroform/isopropanol, and toluene/dichloromethane in ratios (v/v) of 3:2, 4:1, 1:1, 4:4:2 and 9:1 respectively. The method was validated for linearity, precision, accuracy, limit of detection (LOD), and quantification (LOQ) using pesticides concentration at 0.010, 0.300, and 1.000 mg/mL as quality control samples.

**Results:** LLE using toluene:chloroform (4:1, v/v) showed the optimum extraction recovery. The LOD ranged from 0.164– 6.55 mg/mL; LOQ ranged from 0.55–21.83 mg/mL and recoveries ranged from 97.54 – 103.23%. The calibration curves were linear ( $R^2 \geq 0.9937$ ). Accuracy was found to be between -7.5 to 7.2%. Intra-day and inter-day precision were found to be less than 17% for the quality control samples.

**Conclusion:** The method can be used for the diagnosis of poisoning in forensic toxicology and monitoring prognosis of patients with pesticide poisoning.

## Evaluation of Neutrophil Lymphocyte Ratio and C-Reactive Protein as inflammatory markers in head and neck cancer patients

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**Background:** Cancer is a multi-step disease process and is one of the major causes of death worldwide. Among all malignancies, carcinoma of head and neck is the sixth most prevalent cancer with high mortality rate worldwide. Cancer is associated with several biochemical and hematological derangements such as C-Reactive Protein (CRP) and Neutrophil-to-Lymphocyte ratio (NLR). These are inflammatory markers which indicate systemic infections.

**Aims and Objectives:** The present study was planned to evaluate the levels of serum CRP and NLR in patients with head and neck cancer.

**Materials and Methods:** In the present case-control study, Serum CRP and NLR were determined in 50 head and neck Cancer Patients and 50 age matched healthy individuals were taken as control. Diagnosed cases of Head and Neck Cancer age 18-65 years were included and patients on Chemotherapy, Radiotherapy and Post Operative cases were excluded from the study.

**Results:** On comparing mean serum CRP levels and NLR of cancer patients with control group, a significant increase in serum CRP levels was noted in cases ( $43.18 \pm 6.51$ ) when compared with control group ( $7.66 \pm 1.90$ ). NLR were also significantly high ( $7.38 \pm 3.40$ ) among cancer patients.

**Conclusion:** Cancer-associated inflammation is of primary concern as it increases the challenges of treatment protocols. So, monitoring of serum CRP and NLR during screening as well as follow up of cancer treatment is recommended for proper clinical management. Inflammation-related parameters are used to improve cancer prognosis predictions, therefore CRP and NLR are considered as an independent predictor of prognosis

## Association of hyperglycemia and hyperlipidemia with cognitive dysfunction in schizophrenia spectrum disorder

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**Aims and Objective:** The objective of the study was to investigate the association of blood glucose and lipid profile parameters with cognitive impairment in schizophrenia.

**Materials and Method:** 200schizophrenia patients and 169 controls were enrolled in the study. Blood glucose and lipid profile were estimated in all the subjects. Cognition was assessed using Addenbrooke cognitive examination-III (ACE-III).

**Results:** Fasting glucose ( $p < 0.001$ ) and triacylglycerol ( $p = 0.018$ ) were significantly increased and HDL-Cholesterol ( $p = < 0.001$ ), was significantly reduced in schizophrenia cases. Glucose ( $r = - 0.158, p = 0.026$ ), total cholesterol ( $r = - 0.249, p = 0.0001$ ) and triacylglycerol ( $r = - 0.168, p = 0.018$ ) was negatively correlated with total ACE III score. Triacylglycerol ( $p = 0.041$ ) was significantly elevated in schizophrenia cases with mild cognitive impairment. Hyperglycaemia and hyperlipidaemia were observed in patients with schizophrenia.

**Conclusion:** Plasma glucose, total cholesterol and triacylglycerol were associated with various cognitive domains suggesting that hyperglycaemia and hyperlipidaemia might increase the risk of cognitive impairment in schizophrenia

## Myeloperoxidase / Paraoxonase (MPO/PON) ratio in Acute Coronary syndrome Patients.

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**Background:** Myeloperoxidase (MPO), an oxidative stress related enzyme is elevated in Coronary Artery Disease and is involved in development of atherosclerosis. Paraoxonase (PON), is an antiatherogenic enzyme associated with HDL that prevents the formation of OxLDL. This suggest a role of PON in cardiovascular disease and atherosclerosis.

**Aim and Objectives:** Present study was done to evaluate and compare MPO/PON ratio in Acute Coronary Syndrome (ACS) patients with controls. The study evaluates and compares the level of pro oxidant and pro inflammatory enzyme, MPO and anti-oxidant and anti-inflammatory enzyme, PON in ACS patients with controls. Oxidative marker, Malondialdehyde (MDA) and anti-oxidant marker, Reduced Glutathione (GSH) were assessed in ACS patients and compared with controls. Lipid profile, LDL/HDL ratio and Non-HDL were measured in ACS patients and compared with controls.

**Method:** 28 ACS patients were selected from CCU of Pushpagiri Heart Institute, Tiruvalla. 31 age and sex matched controls without Coronary Artery Disease were selected from Pushpagiri Medical College Health Checkup.

**Results:** MPO/PON ratio was significantly high in ACS patients as compared to controls. MPO value in ACS patients was significantly high compared to controls. PON value was significantly lower in ACS patients compared to controls. Total cholesterol, Triglyceride, LDL, MDA, Non-HDL and LDL/HDL were significantly high in ACS patients.

**Conclusion:** Myeloperoxidase and MPO/PON ratio was significantly high in ACS patients than controls. Paraoxonase was lowered in ACS patients when compared to controls. This study suggests that MPO/PON1 ratio can be used as a predictive marker of ACS.

## Diagnostic utility of Neutrophil-to-Lymphocyte ratio (NLR) and Platelet-to Lymphocyte ratio (PLR) in preeclampsia

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**Background:** Preeclampsia (PE) is new onset of hypertension after 20 weeks of gestation. NLR and PLR are now readily available inexpensive inflammatory markers that have been analysed during PE. However, many studies were analysed the diagnostic value of these ratios, but the conclusion is dissimilar due to different ethnicity. In this study, we evaluate the diagnostic value of these ratios in PE among south Indian population.

**Aim & Objective:** To investigate the relationship between Neutrophil-to-Lymphocyte ratio (NLR) and Platelet-to-Lymphocyte ratio (PLR) in women with preeclampsia and birth weight & neonatal APGAR score.

**Materials & Methods:** A case control study was conducted at a tertiary care hospital, South India. Pregnant women who were aged between 18 – 40years were recruited based on ACOG guidelines (2013). Demographic parameters maternal age, gestational age, socio-economic status, systolic and diastolic blood pressure and neonatal outcomes like birth weight, APGAR score at 1 and 5min respectively and NICU admission were collected from study subjects. About 2ml of venous blood samples were drawn from each participant to analyse parameters like Haemoglobin, Neutrophils, Lymphocytes, Platelets, NLR, and PLR. Shapiro-Wilk test was done to check data normality. Mann-Whitney test, Receiver operating curve and spearman's rank correlation was done using SPSS 16.0. A p-value of <0.05 was considered as statistically significant.

**Results:** Total of 60 pregnant women were recruited and they were grouped into 30 PE and 30 normotensive pregnant women. Mean age of the participants was  $26.3 \pm 4.3$  in control and  $24.6 \pm 4.1$  in PE. SBP, DBP, Neutrophils, Lymphocytes, platelets, NLR and PLR was statistically significant between the groups and haemoglobin concentration does not show significant results between the groups ( $p \sim 0.003$ ). In correlation analysis, APGAR 1min score was positively correlated and APGAR 5min score was negatively correlated with SBP, DBP, NLR, and PLR. ROC analysis of NLR shows area under curve 0.998 and PLR was 0.901 respectively. There was no significant association between birth weight and ratios.

**Conclusion:** In this present study, the inflammatory markers NLR and PLR were higher in women with preeclampsia and it was also associated with APGAR scores. Therefore, measuring these ratios in PE can be used as a better prognostic marker to achieve well neonatal outcome

## Serum Renalase levels in maintenance hemodialysis patients

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**Background:** Patients with End stage renal disease (ESRD) are at a higher risk of major adverse cardiovascular and cerebrovascular events. Renalase, a monoamine oxidase secreted by the kidney catabolizes catecholamines and plays a major role in the maintenance of blood pressure. Circulating renalase level is said to be a predictor of mortality and adverse renal outcomes in patients with chronic kidney disease.

**Aims and Objectives:** To estimate the levels of serum Renalase in Maintenance Hemodialysis (MHD) patients and to compare the levels with healthy controls and to assess the relationship of serum renalase with other parameters in MHD patients.

**Materials and Methods:** A cross-sectional study was conducted on 50 MHD patients and 50 apparently healthy individuals, analysing their blood sample for Renalase, lipid profile, fasting blood glucose, urea, creatinine, albumin and haemoglobin levels. Appropriate statistical analysis was done.

**Results:** The mean level of serum Renalase in hemodialysis patients was  $66.50 \pm 34.47$  ng/ml which was significantly higher than the controls ( $48.21 \pm 29.66$  ng/ml) ( $p$ -value  $< 0.01$ ). Serum renalase was positively correlated with urea, creatinine and triacylglycerol ( $r=0.57$ ,  $r=0.25$  and  $r=0.30$  respectively,  $p$ -value  $< 0.05$ ) and was negatively correlated with age, weight, albumin and haemoglobin ( $r$ -value  $= -0.35$ ,  $-0.33$ ,  $-0.34$  and  $-0.24$  respectively) ( $p$ -value  $< 0.05$ ).

**Conclusion:** Serum renalase is significantly elevated in Maintenance hemodialysis patients. The main parameters influencing serum renalase levels are age, weight, urea, creatinine, triacylglycerol, albumin, and haemoglobin.

## Impact of Red Cell Indices on Lipid Profile in Anaemia: A case control study

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**Background:** Role of anaemia and dyslipidaemia in micro and macrovascular complications is well established. Anaemia is reported to be associated with hypocholesterolemia, making the interplay of red cell indices and lipid parameters more complicated than clinically apparent. Aim: Correlate red cell indices and lipid profile in anaemic and non-anaemic individuals. Materials and Methods: Retrospective cross-sectional study of 100 adults who attended out-patient division of preventive health check-up clinics, at our hospital from November to December 2019 was undertaken. The subjects were grouped into cases (N=49) and controls(N=51) based on haemoglobin levels. The lipid profile was estimated on TBA 120FR fully automated analyser and complete blood count was performed by hematology Beckmann Coulter LH780 analyser.

**Statistical Analysis:** Done using SPSS ver 16. Students unpaired t test was used to determine statistical significance between various parameters in both groups. p value of <0.05 was considered statistically significant.

**Results:** Both total Cholesterol [cases (161±46 mg/dl) versus controls (247±39 mg/dl)] and triglyceride [cases (103±45mg/dl) versus controls (172±85mg/dl)] was significantly ( $p<0.01$ ) lower in cases. Hypocholesterolemia was evident in diabetic subjects with anaemia in comparison to their non-anaemic counterparts. Significant difference ( $p<0.01$ ) was obtained for red cell indices such as haemoglobin, Mean Corpuscular Volume, Mean Corpuscular haemoglobin content and Mean Corpuscular haemoglobin.

**Conclusion:** Increased erythropoietic activity might cause hypocholesterolemia which makes anaemics prone to develop cardiovascular complications due to masking of underlying risk factors. This study highlights the need to evaluate red cell indices to rule out concealed hypolipidemia in high risk groups such as diabetics.

## Mean Platelet Volume as a Marker for Cardiovascular Risk in Type 2 Diabetic Patients: A Case Control Study

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**Background:** Mean platelet volume (MPV) can reflect platelet activity, and high MPV is associated with thrombogenic activation. It is well known that dyslipidemia which predisposes to atherosclerosis is more prevalent in diabetics. We undertook the study to check variation of MPV between diabetics and prediabetics and study its association with dyslipidemia.

**Objective:** To evaluate the association of MPV with lipid profile between diabetic and prediabetic subjects and assess role of MPV as a marker of vascular complications in diabetic subjects.

**Materials & Methods:** Case control study of 150 adults who attended out-patient division at our hospital from November to December 2019 was undertaken. The comparison was done between 75 diabetics and 75 prediabetics. The subjects were grouped based on haemoglobinA1c(HbA1c) levels. The lipid profile was estimated on TBA 120FR fully automated analyser and complete blood count was performed by hematology Beckmann Coulter LH780 analyser.

**Statistical Analysis:** Done using SPSS ver 16. Students unpaired t test was used to determine statistical significance between various parameters in both groups. p value of <0.05 was considered statistically significant.

**Results:** The mean MPV of diabetic subjects(8.27fL) was significantly( $p < 0.01$ ) different from prediabetic subjects(7.9fL). Triglyceride and high-density lipoprotein (HDL) cholesterol between both the groups showed significance ( $p < 0.05$ ) on comparison. HDL cholesterol had negative correlation with MPV.

**Conclusion:** Platelet dysfunction occurs in diabetic patients and this is demonstrated by higher MPV in diabetic subjects. MPV, being a cost-effective tool could be used as an indicator of vascular complications due to dyslipidemia.

## Association of HbA1c with serum liver enzymes in type 2 diabetes mellitus

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**Background:** Diabetes mellitus is a metabolic disorder resulting in abnormally high blood glucose levels. Liver associated disorders detected in diabetes include increased liver enzymes, fatty liver disease, cirrhosis and acute liver failure. Previous studies have demonstrated that circulating levels of alanine transaminase (ALT), aspartate transaminase (AST) and alkaline phosphatase (ALP) are increased in individuals with insulin resistance.

**Aims and objectives:** To compare serum liver enzymes among type 2 diabetes mellitus patients with good and poor glycemic control and to correlate HbA1c levels with serum liver enzymes in type 2 diabetes mellitus patients.

**Materials and methods:** The sample size was estimated to be 140 at 5% level of significance and 80% power. 150 type 2 diabetes patients were recruited and they were divided into two groups based on their HbA1c values: HbA1c  $\leq 7\%$  (n=76) as good glycemic control group and HbA1c  $> 7\%$  (n=64) as poor glycemic control group. Fasting venous blood samples were collected for the analysis of parameters.

**Results:** Patients with HbA1c  $> 7\%$  had significantly higher serum liver enzymes AST, ALT and ALP compared to HbA1c  $\leq 7\%$  group. HbA1c was positively correlated with AST, ALT and ALP.

**Conclusion:** Our study shows that serum liver enzymes are increased in diabetic patients with poor glycemic control. Hence routine estimation of liver enzymes in diabetes mellitus patients might be beneficial to predict the onset of liver dysfunction in these patients.

## The Prevalence and Predictive Factors of Instagram Addiction and among Medical and para-medical students

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**Background:** Abundant applications of the Internet in recent years have resulted in the emergence of a phenomenon known as “Internet addiction.” Instagram is reported to be one of the most fast growing social networking applications, which is widely used by a majority of students pursuing various professional and non-professional courses. Social networking sites like have their own negative effects if these applications are used more than expected. Instagram is one of such applications that has taken over many other such social networking applications. This media provides a platform for sharing in private and public way. Sheldon and Bryant, (2016), found out that there is a positive relationship between using Instagram to be cool and for surveillance<sup>2</sup>. This internet addiction can lead to various psychological, physical, as well as social, problems including impaired function at work, impaired academic performance<sup>3</sup>. Internet addiction has also been found to be significantly associated with some psychiatric disorders such as alcohol abuse, attention deficit and hyperactivity, depression, and anxiety.

**Aims and objectives:** 1. To compare the extent of Instagram addiction among students pursuing medical and dental courses. 2. Evaluate association of personal, familial, social, and internet-related factors with internet addiction.

**Materials and methods:** After taking the permission from the respective authorities, a test for Instagram addiction was administered to a total of 217 students. Test for Instagram addiction measured addiction in 6 factors-Lack of control, Disengagement, Escapism, Health and interpersonal troubles, Excessive use and Obsession. A total score of <20 represents normal users, between 20 and 49 represent mild addiction, between 50 and 79 represent moderate addiction, between 80 and 100 severe addiction. Chi-square tests were applied to find out the association between levels of Instagram addiction and student groups, gender, domicile and stay. Statistical analysis of data was carried out by using SPSS and Chi-square test to analyze qualitative variables. A value of  $P < 0.05$  was considered significant for all statistical correlations.

## A comparative study of cardiovascular responses to autonomic function tests in young obese men and women

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**Background:** The ANS helps maintain homeostasis. Cardiac autonomic activity is influenced not only by gender but also obesity which is very prevalent among children and adolescents currently.

**Aims and Objectives:** This study was undertaken to assess heart rate, QT and QT<sub>c</sub> intervals in response to cardiac autonomic function tests in obese and normal medical students and to determine the role of, if any, in these responses.

**Materials and Methods:** 100 undergraduate medical students formed the study group. Heart rate, BP, QT and QT<sub>c</sub> intervals were measured immediately after and five minutes after stopping isometric exercise and cold pressor test.

**Results:** QT and QT<sub>c</sub> intervals were in the higher range in obese subjects when compared with healthy normal subjects. There was significant gender difference in QT<sub>c</sub> at baseline, immediately after the tests of autonomic function and after recovery in both the groups. Hence, there is a positive association between the BP, QT interval and obesity.

**Conclusion:** Regular health checkups in clinically asymptomatic young obese adults will help in detecting changes in ECG that indicate potentially dangerous derangement of left ventricular activity and thereby aid in early intervention so as to minimize long term pathological consequences.

## Study of awareness about the role of artificial intelligence in health care among doctors in a tertiary care centre

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**Background:** Artificial intelligence (AI) is defined as ability of computer systems to perform tasks that require human intelligence. In medical field, AI is used in domains like diagnosis, and treatment. Hence, we decide to assess the awareness and attitude of doctors towards application of artificial intelligence in medical field as it is important for safe delivery of health care services.

**Aim and Objective:** To study awareness about applications of AI in health care among doctors. **Materials and Methods:** The present study was conducted at Department of Physiology, Vinayaka Mission Medical College & Hospital, Karaikal. About 70 doctors of both genders in age group between 22-60yrs were selected. After getting informed consent, a structured questionnaire assessing awareness of doctors towards AI was administered to all the participants in electronic form.

**Results:** Descriptive analysis was made. More than 80% of respondents agreed that AI speeds up services in health care delivery. At the same time less than 5% agreed that it is superior to clinical experience of human doctor. Also more than 80% agreed that AI has low ability to consider emotional well-being of patient.

**Conclusion:** Most of the doctors are well aware and have favorable attitude towards AI. Majority felt that AI will speed up the services in health care delivery. However more than half believed that AI has low ability to consider emotional well-being of patient. Multinational studies were needed to evaluate further the role of AI in health care.

## Impact of Autonomous Learning for Advanced Acquisition of Physiology (ALAAP) module among undergraduate healthcare professional students

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**Background:** With the world moving towards an interprofessional approach to healthcare and physical therapy professionals playing an important role in it, there is a need to explore different deeper learning strategies to enhance student engagement in teaching-learning methodology in Physiology. There is a paucity of innovative teaching-learning strategies implemented on physical therapy students in South India.

**Aims and objectives:** The present study aims to document the effectiveness of self-directed activity-based ALAAP (Autonomous Learning for Advanced Acquisition of Physiology) module for endocrine learning among undergraduate physical therapy students.

**Materials and Methods:** Fifty-five second semester students (28 males and 27 females) of physical therapy course of a private healthcare university were recruited. Prospective interventional study was carried out by implementing ALAAP module comprising of teaching, learning and assessment components for endocrine physiology.

**Results:** The triad approach employed to compare the scores of pre test and post test after the ALAAP module intervention showed a P value of <0.001, Hedges' g effect size of 0.75 with a 95% CI of -3.41 to -1.5 implying the effectiveness of the module to be strong. Also, the feedback obtained was favourable towards this module and showed that there was an increase in both the affective and cognitive domains of learning.

**Conclusion:** ALAAP module for endocrine Physiology is effective positively targeting all types of learners. It helped students' transition from pedagogy to andragogy type of deep learning. The group work done by the students as a part of this module instilled collaborative and cooperative learning.

## Study of pulmonary function test in chronic renal failure and the effect of hemodialysis

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**Background:** Renal failure is the condition where kidneys fail to function properly. Treatment options for renal failure are medical management and renal replacement therapy. Renal replacement therapy includes hemodialysis, peritoneal dialysis and renal transplantation. Pulmonary complications of renal disease have been extensively studied and well documented. The present study was undertaken to evaluate the lung function tests in chronic renal failure cases and the effect of hemodialysis on them.

**Aim and objective:** To study pulmonary function tests of chronic renal failure patients using computerized spirometry and compare the same with normal healthy adults.

**Methodology:** This prospective comparative observation study was conducted on 60 patients at the Clinical Physiology Lab, Department of Physiology, Deccan Medical College and in the Nephrology ward at Owaisi Hospital and Research Centre – Hyderabad from June 2013 to September 2014.

**Results:** Lung function parameters in chronic renal failure patients were significantly lower than the normal subjects. The lung function parameters were also measured in chronic renal failure who were undergoing regular hemodialysis. A small but significant improvement in FVC, FEV<sub>1</sub>, FEV<sub>1</sub>%, PEF and FEF<sub>25-75%</sub> was noticed consistently in most of the patients after hemodialysis. Though the improvement was more marked during first week of hemodialysis therapy, the values steadily and slowly improved after 3 months of hemodialysis therapy but was significantly lower than the normal values. None of our patients attained even near normal values at the end of 3 months of hemodialysis. Blood parameters like blood urea and serum creatinine levels were significantly reduced in repeated hemodialysis.

**Conclusion:** This study confirms the already established fact of restrictive type of ventilatory defect in chronic renal failure patients. This study has reflected the effects of hemodialysis on pulmonary function test in chronic renal failure patients over a short duration.

## **Electromyography changes in assessment of functional status of muscles in subjects with knee-osteoarthritis undergoing low level laser therapy.**

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**Background:** Knee Osteoarthritis (KOA) is a common degenerative joint disease which is one of the leading causes of disability in elderly people. Electromyography (EMG) is an electrophysiological method in evaluating skeletal muscle activity. Low-level laser (light) therapy (LLLT) is a modality of treatment used in several conditions required to suppress the pain, inflammation, stimulation of healing and restoration of function.

**Aims and objectives:** To study surface EMG parameters before and after the low-level laser therapy in subjects with knee osteoarthritis

**Methods:** Subjects with knee OA participated in the study. Low level laser therapy (LLLT) was administered using a laser device with probe giving maximum power output of 10 mw with a wavelength of 810 nm. Surface electromyography (sEMG) of quadriceps muscles was recorded in all the study participants before and after the therapy. The parameters were statistically compared.

**Results:** There was a statistically significant difference between the maximum contraction and duration of contraction before and after the laser intervention in all the muscles.

**Conclusion:** It can be concluded that the muscle performance increased in the subjects with knee OA after the LLLT.

## Diurnal variation in energy expenditure and fat oxidation rate after an acute bout of moderate-intensity exercise by young males

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**Background:** Previous studies have reported that fat oxidation (Fox) during exercise shows diurnal variation. Few studies claim morning hours are better while others reported that afternoon hours are best for the Fox. Data from India is lacking regarding the same.

**Aims and objectives:** To compare energy expenditure (EE) and Fox rate after a steady-state moderate-intensity exercise session done in the morning and late-afternoon by apparently healthy young males.

**Materials and methods:** Ten apparently healthy, untrained but moderately active males aged 18-25 years with normal BMI (18.5-22.9 Kg/m<sup>2</sup>) were involved in the study. Participants walked on a motorised treadmill for thirty-minutes at moderate intensity (50±2% of their heart rate reserve) on two separate occasions at 9-10 AM and 3-4 PM. The respiratory gas analysis was done in the last two minutes of the exercise session to know the EE and Fox rate by indirect calorimetry equations. Fox (g/min) =  $VO_2 \times 1.695 - VCO_2 \times 1.701$ ; EE (Kcal/min) =  $VCO_2 \times 0.55 + VO_2 \times 4.471$ ; where  $VO_2$  and  $VCO_2$  are the volume of oxygen and carbon dioxide consumed and produced in L/min. Paired t-test was applied and  $P \leq 0.05$  was considered significant.

**Results:** No significant diurnal variations in Fox rate (morning: 274±104 mg/min; late-afternoon: 289±104 mg/min;  $P=0.096$ ) and EE (morning: 5.67±1.15 Kcal/min; late-afternoon: 5.70±1.11 Kcal/min;  $P=0.135$ ) were obtained.

**Conclusion:** Fox rate tends to be higher at the end of thirty-minutes moderate-intensity exercise done in the late-afternoon (3-4 PM) as compared to morning session (9-10 AM), but the difference is very small. Larger population size is required to establish significant results.

## Bitter chocolate: A psychological stress reliever– An assessment using Heart Rate Variability

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**Background:** Stress is a universal societal issue, affecting not only the health of the individual but also the economy. Measures, like heart rate and its variability, are known to respond well to stress as there is an increase in sympathetic modulation in stress. Cocoa enriched-polyphenol extracts are beneficial for human health.

**Aims and objectives:** To determine the acute effect of single dose bitter chocolate on psychological stress using HRV.

**Material and Methods:** 45 individuals aged between 18-25 years were divided into 3 groups of 15 each. HRV parameters were measured at rest and later 10g of bitter and regular chocolate was given to Group II and III respectively. 15 minutes after ingestion, all the subjects were asked to perform an arithmetic task. HRV parameters in all the 3 groups were measured immediately after the task with the help of RMS polyrite – D version 3.0.11. Statistical analysis was done using SPSS 21.

**Results:** Increase in sympathetic predominance ( $p < 0.05$ ) after the performance of the arithmetic task indicates the significant mental stress induced among Group I and Group III subjects. After bitter chocolate intake, no significant increase in the sympathetic component was observed in spite of arithmetic task in Group II subjects.

**Conclusion:** Improvement in the sympatho-vagal balance, seen by higher HRV after bitter chocolate intake probably can be attributed to the flavonoids of the cocoa. From these results, bitter chocolate can be considered to have a psychological stress-reducing effect.

## Relationship between blood group phenotypes (ABO, Rh And Kell) and n COVID-19 susceptibility – A retrospective observational study

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**Background:** Since the outbreak of coronavirus disease-19, research has continued to explore multiple facets of the disease. Researchers in many countries are engaged in discovering associations between nCOVID-19 mortality, severity and susceptibility and, other attributes such as demographic, clinical, and laboratory findings. A number of diseases have been found associated with various blood group phenotypes.

**Aim and Objective:** The objective of the present study is to evaluate the relationship between ABO, Rh and Kell blood group phenotypes and COVID-19 susceptibility.

**Material and Method:** In this hospital based, retrospective observational study, 132 COVID-19 patients were enrolled from SMS Medical Hospital in Jaipur, India after receiving approval from the institutional ethics committee. The ABO, Rh and Kell blood group phenotypes along with demographic data of the patients were recorded. The observed proportions of 'A', 'B', 'AB', 'O', 'Rh', and 'Kell' blood groups in COVID-19 patients were compared against the expected proportions (our null hypothesis) of the general population using Pearson's chi-squared test and partition analysis.

**Results:** There were significant differences between observed and expected frequency for the ABO and Kell blood phenotypes. Further partition analysis of ABO phenotypes showed that the group 'A' phenotypes were more susceptible to COVID-19. The Kell negatives were also more susceptible. The blood groups 'AB', 'B', 'O', and 'Rh' showed no significant difference for susceptibility to COVID-19.

**Conclusion:** The study shows a relationship between ABO, Rh, and Kell blood groups and COVID-19 susceptibility. The application of these relationships in clinics should be explored in future studies.

## **A cross sectional study on knowledge, attitude and practice of sanitary pad usage, disposal and alternative methods of menstrual hygiene among medical students**

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**Background:** The waste load generated in India is estimated to be: 12.3 billion pads disposed annually and 113,000 tonnes of menstrual waste annually. The two main concerns with regard with menstrual waste management are 1) lack of proper disposal options and women resorting to unhygienic practices like using a single pad for 12 hours. 2) dumping of unsorted disposed unsafe menstrual waste across the landfills, a global health issue.

**Aim and objective:** To determine the awareness about usage pattern, disposal of sanitary pads and alternatives to sanitary pads among medical students.

**Materials and methods:** A pilot study was conducted. Validation of questionnaire was done after the pilot study and expert review obtained. Subjects were recruited after obtaining informed consent. An online questionnaire was administered on personal details, menstrual history, usage and disposal of sanitary pad, alternatives to sanitary pad, opinion about paid menstrual leave or sick leave policy.

**Results:** 140 students participated in the study and 54 % reported they use single pad (non bio-degradable pads) for more than 6 hours and most common mode of disposal is by wrapping in newspaper. 55% reported that sometimes menstruation keeps them away from colleges and 80 % expressed menstrual leave policy of 1-2 days would be a positive and welcome move. Conclusion: Awareness regarding disposal of sanitary pad and alternatives to sanitary pad can be imparted. Impact of menstruation on student performance can be obtained and special intervention if possible, can be given.

## Revisiting cardiovascular reflexes and resetting in healthy adolescents to analyse mechanisms of physiological and pathophysiological factors influencing individual blood-pressure components

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**Background:** Systolic blood pressure determines “cardiac component”, while diastolic blood pressure is a measure of “vascular compliance”. Mean Arterial Pressure (MAP) and Pulse Pressure (PP) are others, while Rate-Pressure-Product correlates well with myocardial oxygen demand. The oscillations of these individual cardiovascular parameters due to various factors have been a puzzling issue.

**Aim and Objective:** This study aims to hypothesise the probable mechanisms involved in various factors altering specific components of blood pressure.

**Methodology:** 120 normotensive, healthy adults were included with equal number of girls and boys. After obtaining informed consent, age, BMI, handedness and The State-Trait Anxiety Inventory (STAI) for perceived acute and chronic stress were recorded. BP components i.e. SBP, DBP, PP, MAP and RPP were recorded and calculated. Physical, psychological and physiological factors affecting cardiac and vascular systems were deliberated. Mean, SD, T-test and Pearson’s correlation were used for analysis.

**Results and explanation:** Vascular protective role of oestrogen on cardiac and vascular functions was seen in females through estrogen receptors. A negative correlation of age with RPP indicated reduced myocardial metabolic demands. BMI showed strong positive correlation with SBP, DBP and MAP proposing multiple mechanisms. Unlike previous studies, there was no correlation between handedness and BP components suggesting autonomic influences are not strongly deviated by hand preferences. Acute perceived stress showed negative correlation with all BP components recommending extended biopsychosocial model and active baroreceptor reflex unlike acute physical stress which shows elevated BP which can be obtained only through a reduction in the baroreflex gain. Chronic perceived stress correlated with elevated SBP and MAP suggesting cardiovascular remodelling and resetting.

## **Assisted venous drainage by periodic leg elevation: an useful physiological intervention in varicose veins**

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**Background:** In India, about 25% adults suffer from varicose veins. Varicose ulcers, a complication & cosmesis are the major concerns. Compression stockings & surgery are the modes of treatment. Inflammation secondary to interstitial leakage of blood cells and the resultant edema cause varicose ulcerations. Edema reversal by periodic leg elevation, a non-invasive intervention, may improve the clinical condition.

**Aims and objectives:** To compare the results of assisted venous drainage by periodic leg elevation alone with those of endovenous laser treatment.

**Materials and methods:** A 78 years old male case with varicose veins, unwilling for surgery, was taught and advised to elevate legs by 30 degrees, for ten minutes twice a day, to assist venous drainage. Another 71 years old male case with the same clinical score, decided to go for endovenous laser treatment. The results were compared at the end of three years.

**Results:** At the end of three years, the patient managed conservatively was better off, compared to the one managed with endovenous laser treatment.

**Conclusion:** Daily, short term leg elevation, to facilitate venous drainage, may be a good alternative management of varicose veins, in unwilling for surgery.

## To determine the severity of menopausal symptoms and life style characteristics among pre, peri and post menopausal working women of coastal Karnataka

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**Background:** Menopause is associated with various psychological symptoms, behavioral and physiological changes that affect the quality of life of women. There are various complications associated with these symptoms in women entering the transition phase from pre-menopausal to post-menopausal stage. Due to unbalanced diet and low physical activity there is a high incidence of obesity in this transitional stage.

**Aims and Objective:** To determine the menopausal symptoms and lifestyle characteristics among pre, peri and post menopausal working women.

**Materials and Methods:** A cross-sectional study was done on 108 working women who were classified according to the menopausal status into three groups as pre, peri and post menopausal women. All participants were subjected to Menopausal Rating Scale (MRS) to assess their menopausal symptoms. Anthropometric parameters, physical activity of all the women were recorded using the standard procedures, validated questionnaire and were tabulated.

**Results:** Descriptive statistics using SPSS version 20 and MS-excel were used. Post-menopausal women experiencing vasomotor symptoms namely hot flashes (62%) and sweating (54%), physical symptoms such as difficulty in sleeping (50%), decrease in physical strength (83%), decrease in stamina (71%) and lack of energy (71%) were significantly higher. 29% of post menopausal women were obese.

**Conclusion:** In our study vasomotor and physical symptoms were more prevalent in post-menopausal women than other two groups. Post menopausal women were found to be mostly obese than pre-menopausal women.

## Effect of mine tailings on the respiratory morbidity among the women in the exposed and unexposed community

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**Background:** Air pollution being the most important cause for non-communicable disease, mortality with women at higher susceptibility to lung dysfunction, it was necessary to understand the detrimental effect of mine tailing dust on ambient air pollution and its effect on respiratory health of women two decades after closure of mines.

**Aim:** To assess the effect of the mine tailing dust on respiratory morbidity among exposed and unexposed women.

**Materials and Methods:** After institutional ethical clearance and informed consent, 257 females between the age of 18 and 60 years, living in the mining tailing town (exposed) and 217 from non mine tailing town (unexposed) for over 3 years were selected. Respiratory symptoms were assessed using ATS questionnaire, lung functions by computerized spirometer and dust samples for particulate matter (PM) concentration by gravimetric method.

**Results:** The PM concentration in the mining tailing town (1.49 mg/m<sup>3</sup>) was significantly higher than that of non -mine tailing town (0.48 mg/m<sup>3</sup>). The prevalence of respiratory symptoms in the exposed and the unexposed population for cough (34%/31%), phlegm (30%/17%), breathlessness (31%/21%) and asthma (20%/5%) were significantly higher in the exposed population except for cough. The Lung parameters expressed in predicted % for FVC, FEV<sub>1</sub> and PEF<sub>R</sub> were all significantly lower in the exposed population except for the FEV<sub>1</sub>/FVC %. Conclusion: As the exposed group showed significant higher respiratory symptoms and abnormal lung functions it may be presumed that these changes were the result of significantly higher PM exposure above the "National air quality standard permissible limit"

## Comparison study between the effects of physical and ventilation parameters on the pulmonary functions among biomass fuel user and clean fuel user

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**Background:** The rural women in India still use biomass fuel like wood, animal dung, crop residue etc for cooking purpose. Mostly they are exposed to smoke from unprocessed combustion during cooking. The released pollutants which varied in size and composition affect the pulmonary function.

**Aims and objectives:** To evaluate the pulmonary function among rural women using biomass fuel by spirometry. To compare the effects of physical and kitchen ventilation on the pulmonary functions among biomass fuel user and clean fuel users.

**Materials and method:** The comparative study between 100 biomass fuel user and 100 LPG fuel user women were selected in rural of Kancheepuram District. The demographic information's were collected and the pulmonary function tests were done by computerised Spirometer to assess the FVC, FEV<sub>1</sub>, FEV<sub>1</sub>/FVC, FEF<sub>25-75%</sub>, PEF<sub>R</sub> parameter. Age based subgroup values were analysed by Student t test.

**Results:** There was no significant difference in pulmonary function parameter for the age group of 20 to 30 years. The age group of 31-40 were showing significant difference in FEF<sub>25-75%</sub> ( $45.32 \pm 18.87$  vs  $55.39 \pm 17.17$ ;  $p < 0.05$ ); PEF<sub>R</sub> ( $32.65 \pm 12.74$  vs  $41.71 \pm 15.9$ ;  $p < 0.05$ ) with age ( $36.71 \pm 3.119$  vs  $35.29 \pm 2.847$ ;  $p < 0.05$ ), height ( $154.7 \pm 3.186$  vs  $156.4 \pm 2.432$ ;  $p < 0.05$ ), kitchen ventilation ( $0.8529 \pm 0.3595$  vs  $1 \pm 0$ ;  $p < 0.05$ ) and age group 41-50 FVC ( $40.38 \pm 14.38$  vs  $46.94 \pm 10.67$ ;  $p < 0.05$ ), FEV<sub>1</sub> ( $43.21 \pm 15.81$  vs  $52.18 \pm 13.85$ ;  $p < 0.05$ ), and FEF<sub>25-75%</sub> ( $42.5 \pm 24.49$  vs  $52.88 \pm 17.86$ ;  $p < 0.05$ ) with significant difference of age ( $47.23 \pm 2.97$  vs  $45.7 \pm 3.046$ ;  $p < 0.05$ ), weight ( $49.52 \pm 8.949$  vs  $63.7 \pm 13.19$ ), BMI ( $20.83 \pm 3.399$  vs  $26.42 \pm 5.354$ ;  $p < 0.05$ ) and kitchen ventilation ( $0.875 \pm 0.3342$  vs  $1 \pm 0$ ;  $p < 0.05$ ).

**Conclusion:** Pollutants from biomass fuels and poor ventilation causes lung dysfunctions (obstructive and restrictive) among women.

## Decoding the Matrices to Physical and Psychological health in Females.

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**Abstract:** Every female has a kaleidoscope of changing endogenous gonadal hormones during the menstrual cycle which influence various physiological as well as psychological parameters.

**Objective:** To assess the impact of cyclical changes in gonadal hormones during different phases of menstrual cycle on cardiovascular, autonomic, respiratory as well as psychological health in females.

**Materials & Methods:** 30 eumenorrhic females (18-20yrs) were recruited after ethical clearance & informed consent. Those using OC pills & who exercised 3 days/ week were excluded. BBT was noted. On the 10<sup>th</sup> (follicular) & 20<sup>th</sup> (luteal) days HRV was recorded using Naviquire software & subjects were subjected to Balke protocol on treadmill. Every 5 min the HR was recorded till it reached pre exercise values. HRRI, % decline in HR (1&3 min), HR recovery time, HRV, Poincare plots & Chronotropic index were computed. Respiratory parameters like IC, FVC were found using spirometer. Borg scale was used to measure Rate perceived exertion.

**Results:** Data was analyzed as Mean  $\pm$  SD & students paired t test was used. HR was higher in luteal. HRRI was (60)<sub>1min</sub> (71.5)<sub>3min</sub> follicular vs (58)<sub>1min</sub> (64.1)<sub>3min</sub> in luteal phase % decline in HR was (59.2) in follicular phase vs (33.3) in luteal phase. Recovery time was longer in luteal phase. HRV showed reduced RMSSD, PNN50 & Poincare plot showed values of SD1 during luteal phase. IC was (1.21lt) follicular & (1.29lt) luteal, FVC was (2.82lt) follicular & (3.52lt) luteal. RPE showed greater exertion during luteal phase.

**Conclusion:** Our results point towards a blunted vagal reactivation as proved by delayed HR recovery indices & Chronotropic index during the luteal phase and a negative affect thus influencing Cardiorespiratory and psychology in females.

## Exploring knowledge and attitude of medical students with regard to obstructive sleep apnoea (OSA)

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**Background:** OSA a highly prevalent sleep disorders which is considerably increasing in developing countries like India. Despite, its high burden, this group of disease is one of the most neglected disorders by both doctors and patients. More than 90% of OSA patients are left undiagnosed due to lack of awareness and knowledge among physicians and general population. Hence, awareness regarding OSA and ability to diagnose this disease should be as important to primary physician as diagnosing common medical disorders like hypertension and diabetes mellitus. Thus the present study aims to assess the knowledge and perceived importance Objective: To assess knowledge and attitude of obstructive sleep apnoea among the MBBS students using Obstructive sleep apnoea knowledge attitude questionnaire.

**Material and methods:** This is a descriptive cross sectional study carried out in 145 undergraduate medical students in the age group of 18-25 yrs at Sri Devaraj Urs Medical College, Kolar. Institutional ethical clearance was obtained. Obstructive sleep apnoea knowledge and attitude questionnaire was administered to all participants to assess the knowledge and attitude of medical students towards OSA.

**Results:** A Mann Whitney U test was conducted to determine whether there was a difference in the score of undergraduates & premedical graduates. From this data it can be concluded that there was a significantly higher score among premedical graduates compared to 6<sup>th</sup> term group (U=2002.0, z=-2.392, p<0.017).

**Conclusion:** Premedical graduates' knowledge regarding OSA is better than undergraduate students, but still both the group of student's knowledge is very poor. Dedicated sleep medicine training covering main sleep disorders should be done in all medical colleges.

## Complete blood count and cardiovascular risk markers in Type2 Diabetes Mellitus- A cross section study

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**Background:** Hematological indices are an independent predictor of cardio-vascular diseases risk ratios and associated with a high white blood cell count are comparable to other inflammatory markers.

**Aim and Objectives:** The main aim of the current work was to evaluate the correlation between cardiovascular risk markers with the complete blood count among T2DM. Study population included 105 subjects with Type2 diabetes mellitus.

**Materials and Methods:** Age group of the study participants was 40-60 years. Data analysis was performed with Statistical Package for Social Sciences version 17. Differences among groups were calculated using t test and/or Mann-Whitney Test for parametric and nonparametric variables, respectively. Chi – square test were used. The correlation analysis was performed by Pearson correlation/ Kendall's tau method for parametric and nonparametric variables respectively.

**Results:** Mean age of the subjects was  $49.96 \pm 10.9$ . Subjects were divided into Group A (HbA1C < 7.0%) with 59 participants and Group B (HbA1C > 7.0%) with 46. and the Mean value of HbA1c was  $7.5 \pm 2.3$ . According to hba1c relationship with cardiovascular risk markers and hepatic enzymes, the mean values were higher in all the in Group B except HDL and significant association was found with SBP, DBP, HsCRP and GGT, ALP, TGL, LDL-C, TC. Hematological parameters shows correlation with Cardiovascular risk markers.

**Conclusion:** Hematological parameter shows significance with various cardio vascular risk markers and concluded that hematological parameters can be used as a biomarker to assess the cardio vascular diseases.

## Quality of sleep is associated with Body Mass Index, cardiovascular Parameters and cognition in young adults

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**Background:** The ill-health effects of inadequate sleep and sleep-related disorders are frequently overlooked and underestimated by the general population. Recent studies have reported a declining trend in the quality of sleep among young adults due to the extensive usage of electronic media. However, data regarding the quality of sleep and its association with body mass index, blood pressure and cognitive status of young adults is limited.

**Aim and objectives:** This study aimed to assess the quality of sleep among young adults using a simple self-reported pre-validated questionnaire and to measure the extent of its correlation with body mass index (BMI), blood pressure, extent of daytime sleepiness and cognitive status of these individuals.

**Materials and methods:** Two hundred young adults aged 18-25 years were recruited in the study. Blood pressure was measured as per the standard protocol and BMI was calculated using the Quetelet's index. Quality of sleep was assessed using the Pittsburgh Sleep Quality Index (PSQI) score, daytime sleepiness using Epworth Sleepiness Scale (ESS) score and cognitive status using simple visual reaction time (VRT) and simple auditory reaction time (ART). Correlation between the study parameters was assessed using the Pearson correlation coefficient test.  $P < 0.05$  was considered statistically significant.

**Results:** Statistically significant positive correlations ( $p < 0.001$ ) were observed between PSQI scores and BMI, blood pressure, heart rate and ESS scores. Similarly, significant positive correlations ( $p < 0.001$ ) were observed between PSQI scores, ESS scores and reaction time (VRT and ART).

**Conclusion:** Poor quality of sleep is associated with increased body mass index, increased blood pressure and reduced cognition in young adults.

## Link of oxidative stress to pulmonary functions contributed by matrix metalloproteinase in South Indian population – An observational study

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**Background:** Oxidative stress plays a key role in the etiopathogenesis of several disease conditions and most commonly pulmonary diseases. Pulmonary tissues are susceptible to oxidative stress from ambient air pollution. Serum Malondialdehyde is a sensitive biomarker of oxidative stress. Oxidants also enhance proteinase mediated lung injury.

**Aim:** In the current study we have aimed at correlating the serum Malondialdehyde levels with pulmonary functions and serum Matrix metalloproteinase-9 levels in south Indian population.

**Materials and methods:** This was a cross sectional study conducted among healthy volunteers of age group 18 to 45 years. Pulmonary function tests of the subjects were recorded using computerised spirometry (SPIROLAB III). Serum malondialdehyde levels were estimated using Thiobarbituric acid Reactive Substances assay and serum Matrix metalloproteinase-9 levels were estimated by Enzyme linked Immunosorbent Assay.

**Results:** Significant negative correlation was found between Malondialdehyde and FEV1/FVC ratio and significant positive correlation was found between serum malondialdehyde levels and Matrix metalloproteinase-9 levels. Individual link of Malondialdehyde levels and FEV1/FVC ratio, malondialdehyde levels and Matrix metalloproteinase-9 levels were established by linear regression analysis.

**Conclusion:** Our results state that increased oxidative stress directly affects pulmonary functions and it also increases MMP-9 levels, which again lead to decline in pulmonary functions.

## Clinical utility of blood pressure measurement using the newer palpatory method for both systolic and diastolic Blood Pressure

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**Background:** Blood Pressure measurement being part of clinical examination gives a fair idea about hemodynamic status the subject. The auscultatory method for BP is considered as gold standard, simple, noninvasive way to measure blood pressure in patients as well as in healthy subjects.

**Aims and Objectives:** The present study was designed to compare systolic and Diastolic blood pressure readings using the standard Auscultatory method with that of newer palpatory method as well as assessing the reliability of the newer palpatory method.

**Methods and Material:** A cross sectional study comprising total 400 (240 male and 160 female) subjects in the age range of 20-60 years. Subjects were assessed for arterial BP measurement using standard auscultatory method by one observer. Another observer blinded with auscultatory method record blood pressure using the newer palpatory method on the same subjects in the same settings. The difference in the readings between the two methods was compared. The Inter-rater reliability of the newer palpatory method was compared with standard method using Intra Class correlation statistics.

**Results:** Present study observed excellent reliability of the newer palpatory method with standard method with an ICC value of 0.997 and 0.993 for SBP and DBP respectively. Bland Altman plot for both SBP and DBP using Auscultatory and Palpatory method has shown minimum variability and good reliability when both methods are used by independent observers. Conclusions: With practice and experience newer palpatory method can be used to asses Blood pressure fair accuracy.

## Comparison of skeletal muscle function & body composition between head & neck cancer patients and healthy controls

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**Background:** Assessment of skeletal muscle function (SMF) is of clinical relevance in the prediction of treatment outcome, prognosis and survival in head & neck cancer (HNC) patients. Hand grip strength (HGS) & hand grip endurance (HGE) are considered as surrogate marker for whole body skeletal muscle function. Further, SMF depends on the body composition (BC). Hence in this study, we compared, HGS, HGE and BC between HNC patients and healthy controls.

**Materials and Methods:** A cross-sectional study was conducted in 44 subjects in the age between 18 to 60 years. Twenty-two were histologically proven HNC patients prior to cancer specific treatment and twenty-two were age and gender matched healthy volunteers. The parameters recorded were Height, weight, waist circumference, hip circumference, HGS, HGE and BC. HGS was measured by using a hand held dynamometer and HGE by using a stop watch. BC was measured by whole body bioelectrical Impedance analysis method using Body stat Quad scan 4000 device.

**Results:** Comparison of data between HNC patients & healthy controls was done by student t test. Mean HGS, HGE, lean body mass, fat free mass index, Phase angle, body cell mass and body cell mass index were found to be significantly reduced in HNC patients when compared to healthy subjects. Whereas body fat mass percentage was more in patients.

**Conclusion:** Our findings revealed a significant reduction in HGS and HGE in HNC patients which denotes decreased skeletal muscle function. It is attributed to alteration in body composition in the form low muscle mass & more fat mass.

## Prevalence of vascular dysfunction in relation to blood sugar levels across complete glycaemic spectrum

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**Background:** Vascular dysfunction is well established in diabetes. Diabetes is seen as the end result of long standing subclinical metabolic dysfunction, and vascular dysfunction is reported even in prediabetes. First degree relatives of diabetes (FDRD) are seen as at-risk population who can develop diabetes at a later age. Hence it become imperative to identify the start of vascular function along the glycaemic spectrum.

**Objectives:** To study the vascular function and its association with blood sugar levels across the complete glycaemic spectrum.

**Materials and Methods:** We recruited volunteers (n=252) and classified them into four groups normoglycaemic non-first-degree relatives of diabetes (n=63), normoglycaemic FDRD(n=63), prediabetes (n=63), and diabetes(n=63), based on their fasting and post prandial blood glucose values (OGTT). We measured anthropometric variables, vascular function (using flow-mediated dilation (FMD) and biomarkers of vascular function (VEGF, vWF, ET-1), and blood sugar levels.

**Result:** In the present study, we observed vascular derangements in the following order Diabetes > prediabetes > FDRD > non-FDRD and there is a negative association maintained between plasma glucose level and vascular function.

**Conclusion:** Vascular derangements begin at FDRD and exaggerate with advancement of disease.

## The relationship of neck circumference to blood pressure among Indian adult male- A cross-sectional study

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**Background:** Neck circumference indicates upper-body subcutaneous adipose tissue and is associated with insulin resistance and obesity. Insulin resistance and obesity are known risk factors for hypertension. Using a non-invasive, easy technique like neck circumference which can be done in masses would help us to identify at risk population. However, the association of blood pressure and neck circumference is still not evaluated among adults of India.

**Aims and objectives:** To assess the relation between neck circumference and blood pressure in Indian adult male.

**Materials and Methods:** We analyzed the association of blood pressure and neck circumference in 50 Indian male adults. Blood pressure was measured using automated blood pressure monitor and anthropometric measurements (Height, Weight, Waist circumference, Hip circumference and Neck circumference) were measured by certified anthropometrist. Correlation between anthropometric parameters and blood pressure was done using Pearson's correlation test.

**Results:** Increased BMI and waist circumference correlated with increased blood pressure. Neck circumference did not correlate with SBP and DBP among adult Indian males. Conclusion: In Indian male adults, there is no correlation between neck circumference and blood pressure.

## Effect of REM sleep deprivation on sperm quality in wistar albino rats

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**Background:** Today, prolonged wakefulness is a widespread phenomenon. Working hours are constantly increasing. In certain jobs, people face sleep restriction. Some professions such as health care, security and transportation require working at night. Furthermore, people tend to stretch their capacity and compromise their nightly sleep, thus becoming chronically sleep deprived. The mechanism of sleep and its consequences are much studied. But, the mechanism of suppression of reproductive system upon chronic sleep deprivation is less understood.

**Aim and Objectives:** Objective of the present study was to analyze the efficacy of chronic REM sleep deprivation on sperm quantity and quality in Wistar albino rats.

**Materials and methods:** Adult Wistar male albino rats, weighing 150-180 gms were used in this study. Animals were divided into two broad groups: Group 1: Control and Group 2: 96 hrs REM sleep deprivation exposed animals. After 96 hours of REM sleep deprivation animals will be euthanized and epididymis sperm will be collected and analyzed for sperm quality. Serum will be used to analyze the corticosterone level.

**Result:** A significant decrease in the sperm count, sperm motility, sperm viability and significant increase in the dead sperm was observed in REM sleep deprived groups when compared with control animals.

**Conclusion:** Present study showed a significant decrease in the sperm quality. Hence it is shown that Sleep deprivation apart from having other physiological effects is one of the main causes of male infertility.

## Odour induced modulation of EEG waves in healthy subjects

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**Background:** It has been found in some of the electrophysiological studies that odor does affect the rhythm of brain waves. However, there is a lot of inconsistency in terms of the reported findings. Some have reported an increase in alpha activity, whereas others observed increase in theta activity and no change in alpha.

**Aim and Objective:** To ascertain the qualitative effects of two odours on the electrical activity of the brain recorded through Electroencephalogram.

**Material and Methods:** This study was conducted on 25 healthy, right-handed male and female volunteers. Baseline EEG for 20 min was recorded, followed by test recording for 9 min comprising inhalation of odor 1 (lavender) for 3 min, no odor (for 3 min), and odor 2 (peppermint) for 3 min. Odors were administered through an odor delivery system, which comprised an inlet and outlet rubber tubes connected to a container for placing odoriferous substance

**Result:** EEG was inspected qualitatively for abnormalities in prominent locations and hemisphere. Both the odors elicited significant EEG abnormalities when compared to baseline recording, which served as control. Lavender and Peppermint both elicited diffuse slowing, focal slowing, and sharp waves mainly in temporal region and partly in centro-parietal and frontotemporal region, with more right hemispherical involvement, and increased theta rhythm. Peppermint also produced left hemisphere dominant asymmetry.

**Conclusion:** Both lavender and peppermint odor inhalation produces EEG abnormalities which are transient, predominantly affect right hemisphere, and temporal region. Lavender has relatively more relaxing effect on brain compared to peppermint

## Emerging ethical dilemmas in the use of intelligent computer programs in decision making in healthcare

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**Background:** As Artificial Intelligence enters the medical arena it is imperative to understand various emerging ethical dilemmas faced that could be faced by health professionals.

**Aims and objectives:** To assess the level of awareness and perceptions of health professionals regarding the various ethical dilemmas in the use of intelligent computer programs in healthcare decision making.

**Methods:** The present study is a cross-sectional, non-interventional and questionnaire-based descriptive study. This study was done in a deemed to be university hospital, Karnataka, India. Of the total 96 participants, 30 were medical participants (physicians and surgeons), 36 dentists and 30 nurses. The participants' responses to the questionnaire were collected on a Likert scale. Results: Medical and nursing participants opined that intelligent computer programs can take both major and minor independent decisions in patient care when the physician is unavailable. The majority of the participants felt that in the decisions made by the intelligent computer programs, patient's rights and wishes might not be respected, compromising autonomy. The majority agreed that computer-assisted information extraction helps in better treatment of patients causing beneficence. Medical and dental participants thought that intelligent computer programs cannot communicate well with patients, do not have a conscience, can be hacked. Nurses opined that the health professional-patient relationship deteriorates because of the loss of 'healing touch', causing maleficence. Participants opined that the use of intelligent computer programs could serve justice in the form of equity and equality in healthcare.

**Conclusion:** Intelligent computer programs should be used wisely, by upholding ethical principles of patient autonomy, beneficence, non-maleficence and justice in patient care.

## Effect of *Withania Somnifera* on pro and anti-inflammatory signalling molecules in sleep deprivation induced Wistar rats

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**Background:** Sleep plays an imperative role in maintaining good health and well-being right through the life of a person. Sleep and the circadian rhythm wield a strong regulatory influence on immune functions. The defense mechanism gets weaker due to sleep loss and in this manner the susceptibility to infection increases. *Withaniasomnifera*(WS), a member of Solonaceae family is widely used traditionally because of its antioxidant, immunomodulatory, anti-inflammatory and anti-tumor properties.

**Aim:** The study is aimed to assess effect of *Withaniasomnifera* on pro and anti-inflammatory signaling in sleep deprivation (SD) induced Wistar rats.

**Materials and Methods:** The study was done in the Department of Physiology, Meenakshi Medical College & Hospital, Enathur, Kanchipuram. 24 male Wistar rats weighing 120-150g were used for the study. They were divided into 4 groups with 6 animals in each group. (Group I - cage control, Group II - large platform control, Group III - sleep deprived group & Group IV – WS treated SD group). Animals were deprived sleep for one week using a modified multiple platform method. The mRNA expression of pro inflammatory markers (IL-1 , IL-6, MCP-1, and TNF- ), anti-inflammatory marker (IL-10) in the cortex of control and sleep deprived rats was done using real time PCR. Protein expression was done using western blot analysis. Statistical analysis was done by one way ANOVA using SPSS version 20.

**Result:** In our study, the pro-inflammatory markers were significantly elevated and the anti-inflammatory marker was significantly decreased in sleep deprived rats. These signaling molecules were restored after administration of *Withaniasomnifera* in Wistar rats. Hence sleep deprivation is proved to be potent stressor.

**Conclusion:** *W.somniferaroot* extract can be used as one of the potential therapeutic drug for the treatment of sleep deprivation induced inflammatory diseases.

## Evaluation of BAEP for early diagnosis of central and peripheral neurological alterations in adult patients of iron deficiency anaemia.

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**Background:** Anemia is functionally defined as an insufficient RBC mass to adequately deliver oxygen to peripheral tissues. It affects approximately 1.62 billion people in both developed and developing states. In India, 20.5% or 226 million of the total population are adolescents. Among them, anemia prevalence ranges from 56% to 90.1%. Such high prevalence is due to multiple factors like predominant vegetarianism, peculiar food habits, cultural practices, low socioeconomic status of majority of population and absence of sanitary latrine. According to National Family Health Survey 4, 53% of Indian women aged 15-49 years are anemic.

**Aim:** Evaluation of Brainstem auditory evoked potential for early diagnosis of central and peripheral neurological alterations in adult patients of iron deficiency anemia.

**Materials and methods:** BAEP was recorded in 30 patients of iron deficiency anemia from the community of either sex. Recording was done using RMS EMG EP MARK II machine. It showed absolute peak latencies of waves I, II, III, IV and V together with interpeak latencies of I-III, I-V and III-V and amplitude of wave I and V.

**Results:** There was a prolongation of all BAEP absolute and interpeak latencies in anemic patients as compared to the control group.

**Conclusion:** We can conclude that BAEP is useful non-invasive tools for early detection of subclinical auditory dysfunction.

## Effect of short-term practice of Bhramari Pranayama on Cognitive performance in school students

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**Background:** Chronic high-academic stress adversely affects student's learning, performance and well-being. Pranayama practice is an easy and effective way to maintain sound physical and mental health. Traditional yogic literatures highly recommend Bhramari Pranayama for all-round mental well-being. However, there is not much scientific evidence to support this assumption. Hence, this study was conducted to evaluate the effect of Bhramari Pranayama on Cognitive performance in school students.

**Aims and Objectives:** To evaluate effect of short-term (6 weeks) practice of Bhramari Pranayama on Cognitive performance in school students.

**Materials and Methods:** After obtaining Ethical clearance, 60 school students of class X (15 to 17 years of age) were randomly selected for the study. Assent from participants and written informed consent from their parents were obtained after explaining the procedure. After procuring history and general physical examination, baseline data including Cognitive performance were obtained using: Six-letter Cancellation Test (SLCT); Trail Making Tests (TMT) A & B; Digit Span Forward (DSF) & Backward (DSB). Then Bhramari Pranayama was practiced for 6 weeks by the students. Thereafter, Cognitive performance tests were repeated. Pre and post -pranayama Cognitive performance data were compared and analyzed using descriptive statistics and Student's t-test, (p-value<0.05 as statistically significant).

**Results:** Post Bhramari Pranayama practice, there was a significant reduction in the time taken to complete TMT-A and TMT-B; & a significant increase in the DSF test score, as well as in the mean Total & Net scores of SLCT (p-value<0.05). There was no statistically significant difference observed in the DSB test score.

**Conclusion:** A few weeks practice of Bhramari Pranayama leads to a significant improvement in the Cognitive performance.

## Effect of yoga on Pulmonary Function Test among asthmatics

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**Background:** Bronchial Asthma is a chronic inflammatory disease of airway associated with hyperresponsiveness of airways resulting in breathing difficulty. Anti asthmatic drugs are available to treat. Complementary or alternative therapy like yoga enhances health with positive outcome. Yoga aids in normalized breathing and controls many physiological variables. Being non pharmacological, yoga practices bears no adverse effects and this study is aimed at assessing pulmonary function test among asthmatics after yoga practices.

**Aims and Objectives:** To compare the Pulmonary Function Test among asthmatics aged 17-25 years before and after yoga practices for four weeks.

**Materials and Methods:** 30 subjects who were asthmatics and have not taken any yoga training prior were included in this analytical cross sectional study. After obtaining written informed consent from all the subjects, a brief history and a thorough clinical examination was done. Pulmonary function test was then assessed by using Computerized Spirometer "COSMED" for the subjects before the practice of yoga and after four weeks of yoga practice.

**Results:** Paired 't' test was used to compare the values and there was a significant increase in FVC with p value <0.005 and FEV1 with p value <0.001 after 4 weeks of yoga practice. Conclusion: Regular practice of Yoga is beneficial and improves the respiratory function. Hence yoga can be instituted as an adjuvant therapy in mild to moderate asthmatics.

## Assessment of hand grip strength among urban and rural elderly people

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**Background:** Hand Grip strength, a non-invasive method is an indicator of total body strength, general health, nutritional status, a risk-stratifying method for all cause of death. It is affected by age, gender, nutritional status, socio-demographic status and anthropometry. Rural and Urban people differ in physical activity and body dimensions.

**Aims and Objectives:** Our aim is to compare the hand grip strength in urban and rural elderly people.

**Materials and Methods:** In this cross-sectional study hand grip strength of 15 urban and 15 rural elderly people > 50 years were compared. Hand grip strength was measured by digital Hand Grip Dynamometer EH101.

**Results:** Urban group with mean age of  $60.33 \pm 7.8$  was compared with rural group with age of  $59.87 \pm 6.7$ . We found a significant difference between hand grip strength of both groups ( $p < 0.008$  for right hand and  $p < 0.010$  for left hand). There was also a significant difference in forearm circumference and forearm muscle circumference between urban and rural groups.

**Conclusion:** We conclude that people living in rural areas have higher hand grip strength than people in urban areas. This can be again explained by higher forearm muscle circumference in rural group. So we can use the hand grip strength as one of the health indicators in general population.

## Assessment of EEG spectrum and its association with cognitive impairment in breast cancer patients undergoing chemotherapy

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**Background:** Post Chemotherapy Cognitive Impairment (PCCI) is a debilitating side effect of chemotherapeutic treatment of breast cancer. Till date, clinical diagnosis remains the major diagnostic modality. Quantitative EEG (qEEG) is a low-cost, sensitive test to detect abnormal neural signalling in brain. In this study we attempt to evaluate perturbations in qEEG markers and objective cognitive test battery like psychology experiment building language (PEBL) tool version 2.1 at three time points: baseline, immediately after chemotherapy and 3 months after chemotherapy.

**Aims and objectives:** The study aims to find objective evidence of deranged qEEG and cognitive test scores among newly diagnosed breast cancer patients undergone chemotherapy.

**Material and methods:** Twenty-three newly diagnosed breast cancer patients were recruited based on inclusion and exclusion criteria. Ten minutes eyes closed EEG was recorded before and after administration of cognitive task. This was repeated twice, once after chemotherapy and the second time three months after chemotherapy. The qEEG parameters like total power (TP) across 1-40 hz, alpha to theta ratio, relative alpha power, change in TP after cognitive test and cognitive test scores were evaluated for the objective evidence of cognitive impairment and altered neural signalling.

**Results:** We found increased TP across multiple frontal channels which persisted beyond third time point. Alpha to theta ratio and relative alpha power decreased immediately after chemotherapy which reversed three months after and there was reduction in cognitive test scores. Conclusion: Objective qEEG and cognitive test evidence of cognitive impairment exists among breast cancer PCCI patients beyond three months after chemotherapy.

## **A comparative study to evaluate outcome of Traditional lecture classes and Self-directed learning sessions among first MBBS students.**

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**Background:** The recently introduced competency based medical education has advocated self -directed learning as an indispensable tool in medical education. Implementing the new curriculum is quite challenging for medical educators while teaching newly admitted undergraduate medical students.

**Aims:** To compare the outcome of traditional lecture classes with self-directed learning sessions. **Materials and Methods:** This observational study was conducted in department of Physiology of Burdwan Medical College after taking Institutional ethical clearance (BMC/Ethics/020). 200 first MBBS students were included. Students were informed about a particular competency seven days prior to lecture classes (25 in number) as well as SDL sessions (25 in number). Prior to each sessions a pre-test MCQ was conducted to assess basic knowledge of the students. After the class a post-test MCQ was conducted to assess knowledge gained by the students in the teaching learning session.

**Statistical analysis:** Analysis was done using t test.

**Results:** There was no difference in Pre-test scores between the two different teaching sessions. Students performed significantly better in Post-test sessions as compared to Pre-test sessions following both Traditional as well as SDL sessions. Students performed significantly better following Self-directed learning sessions as compared to Traditional lecture classes. Traditional lecture classes (post-test session):  $63.86 \pm 8.60$  vs. Self-directed learning sessions (post-test session):  $66.44 \pm 8.28$ ; P value: 0.0024.

**Conclusion:** Self-directed learning sessions were observed to be more effective in the present study as students performed significantly better following Self-directed learning sessions as compared to Traditional lecture classes.

## **A comparative study of perceived stress and job satisfaction of doctor and para medical staff during COVID-19 pandemic in a Government Medical College of West Bengal.**

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**Background:** The COVID-19 Pandemic has imposed a great challenge for doctors and paramedical workers. Nearly two hundred doctors have expired and ten have committed suicide according to recent reports. Unfavourable working atmosphere, huge patient load, and high risk factors of contracting the disease are a few of the causes which have increased mental health issues.

**Aims:** To compare perceived stress levels and Job satisfaction scores of Doctor and Para Medical Staff in Medical College of West Bengal.

**Material and methods:** This cross-sectional observational study was carried out on 73 Doctors and 110 Para Medical Staff in Burdwan Medical College after taking institutional ethical clearance (Memo No: BMC/Ethics/033) and informed consent of the subjects. Google form was used to complete the survey conducted in a time span of one month. There were no direct identifiers in the questionnaire. Job Satisfaction Scale and Perceived Stress Scale of Sheldon Cohen was used to assess job satisfaction and perceived stress scores.

**Statistical Analysis:** Analysis done by using unpaired t test.

**Results:** There were 183 (Male 103 and female 80) participants in the present study. There was no significant difference in gender between the two groups. PSS: Doctor Mean  $21.067 \pm 3.97$  vs. Para Medical Staff  $19.04 \pm 6.19$ ; P value 0.009; Job Satisfaction Scores: Doctor  $36.27 \pm 6.46$  vs. Para Medical Staff  $37.79 \pm 4.93$ ; P value 0.15.

**Conclusion:** There was no difference in Job satisfaction among Doctor and Para Medical Staff in the present study, but doctors were found to have significantly higher perceived stress scores as compared to the other group.

## Study of changes in arterial blood gas levels in bronchial asthma in comparison with normal range

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**Background:** Asthma is a common non communicable disease. The global initiative of asthma (GINA) described asthma as a heterogeneous disease characterised usually by inflammation. 3 components that describe bronchial asthma are 1) chronic airway inflammation 2) reversible airflow obstruction 3) increased bronchial reactivity. In 2016 Asthma accounted for loss of 23.7 million DALY globally. For middle and low socio-economic status Asthma accounts for financial burden, unnecessary morbidity and mortality.

**Aims & Objectives:** To compare and correlate the values of arterial blood gas levels in severe asthma with normal reference range.

Objective is to measure PaO<sub>2</sub>, PaCO<sub>2</sub>, pH variations in severe asthma with that of normal. **Materials and Methods:** In this study patients from age group 40-70 years including males and females admitting in to GGH Vijayawada with severe acute asthma are taken. Children, pregnant women, smokers and patients with other respiratory disorders are excluded. After taking consent, the radial or femoral arteries are palpated and Allen's test is performed. 2 cc syringe with 24G needle flushed with heparin (25,000 IU in 5 ml). 2 cc blood is drawn from any one of above mentioned artery by syringing. The blood sample is analyzed with Siemens blood gas analyzer giving pH, PaO<sub>2</sub>, PaCO<sub>2</sub>, HCO<sub>3</sub><sup>-</sup> values.

**Results:** Results showed respiratory acidosis in 72.5% patients and respiratory alkalosis in 10% and remaining 17.5% presented with normal blood pH levels. Decreased PaO<sub>2</sub> is observed in 67.5% patients and 32.5% patients presented with normal PaO<sub>2</sub>. Hypercapnia is seen in 82.5% patients and 12.5% patients presented with Hypocapnia and 5% with normocapnia.

**Conclusion:** Arterial blood gas analysis is widely used investigation in clinical practice while dealing with respiratory diseases especially bronchial asthma. This study revealed that most of patients shown hypoxemia with respiratory acidosis and some shown hypoxemia with respiratory alkalosis. However ABG analysis alone is not sufficient to evaluate severity of attack. It should be supported by further investigations like PEFr, FEV<sub>1</sub> along with correlation of signs and symptoms clinically.

## Gender differences in PEFr, timed vital capacity by computerized spirometry in medical students of BRIMS, Bidar, Karnataka.

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**Background:** Sex is an important factor affecting most of the parameters of spirometry and was significantly lower in females than males. The differences could be explained by differences in fat free mass, chest dimensions and power of respiratory muscles.

**Aims and Objectives:** To study the gender differences in PEFr, Timed vital capacity among medical students.

**Materials and Methods:** After obtaining ethical committee approval, study was undertaken in young adults of age 18-25 years medical undergraduate students of BRIMS, Bidar. Duration of study was 3 months; Data was collected randomly selecting 200 males and 200 female healthy non smoking individuals with no history of respiratory diseases. After the selection of subjects basic demographic data such as age and sex were recorded. Pulmonary function tests were performed using computerized spirometry and an Independent Samples t-Test was carried out. Results: In the comparison of PEFr, FEV<sub>1</sub> and FVC between males and females, the values obtained in males were considerably higher than females and were statistically significant [P value < 0.05].

**Conclusion:** The values of FEV<sub>1</sub>, FVC and PEFr were higher in males than the females.

## To study the effect of Vitamin D level on inflammatory markers and spirometry parameters in patients of Bronchial Asthma

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**Background:** Vitamin D could be involved in asthma pathogenesis. It is known to have effect on the inflammatory process and the lung functioning in asthma patient. In this study, we have tried to study the effect of vitamin D level on the inflammatory process and lung function.

**Aims and objectives:** To record spirometry parameters and levels of inflammatory markers (IL-6 and IL-10) and to compare and correlate serum levels of inflammatory markers in patients of bronchial asthma.

**Materials and Methods:** The present cross-sectional experimental study involved 74 patients of bronchial asthma, aged 18- 45 years of either gender. Clinically diagnosed cases of bronchial asthma were enrolled and subjected to spirometry and blood examination for vitamin D estimation and interleukin levels. Those patients having comorbidities, on vitamin D supplementation and BMI > 25 kg/m<sup>2</sup> were excluded from the study. Subjects were divided into two groups based on the serum levels of vitamin D. The results were further analysed for any correlation between the inflammatory markers and spirometry parameters.

**Results:** A Significant positive correlation ( $p < 0.05$ ) was found between spirometry parameters and IL-10 having normal vitamin D levels, on the other hand, no correlation established between inflammatory markers and spirometry parameters in low vitamin D group patients.

**Conclusion:** Vitamin D has an anti-inflammatory action and protective effect on the lung function in bronchial asthma patients.

## Screening of the psychological status of patients with Autoimmune Connective Tissue Disorders

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**Background:** Autoimmune connective tissue disorders (ACTD) are immune-mediated chronic diseases. Cognitive impairment associated with these diseases decreases the quality and the standard of living. Age, gender, depression could be confounding factors for this cognitive impairment. Emotional status of the patients like depression, anxiety and stress is altered which may be due to the involvement of nervous system.

**Aim and objective:** To assess the psychological status of patients of ACTD namely Rheumatoid Arthritis, Systemic Lupus Erythematosus, Sjögrens syndrome and Scleroderma using DASS 21 questionnaire.

**Materials and methods:** A cross-sectional study was conducted in the Department of Physiology, AIIMS Bhopal during December 2018 to May 2019. A total of 109 patients of ACTD were enrolled in the study. DASS 21 questionnaire was given to all the patients after receiving their written informed consent and score for depression, anxiety and stress were calculated.

**Results:** In the present study, around 16.6% of patients with SLE had severe depression and 25% had extremely severe stress which is the highest among the four diseases evaluated. The percentage of patients with severe and extremely severe depression, anxiety and stress was very low in all these diseases when compared to patients in normal DASS grade. When cognitive impairment assessed by P300 were correlated with DASS score, no significant relation was found.

**Conclusion:** The study suggests that most of the cognitive complaints of the patients are not due to depression associated with chronic disease. This indicates that the cognitive deficit in patients of ACTD could be due to neuroinflammation and not due to depression.

## **In vitro antiproliferative activity of ethanolic extract of *Blepharismaderaspatensis* (L) against various cancer cell lines**

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**Background:** Use of plant-based compounds in cancer therapy is common practice. Traditionally, *Blepharismaderaspatensis* of family Acanthaceae has been assigned antioxidant, anti-inflammatory, antimicrobial, anti-ulcer and wound healing properties. Few studies have examined its antiproliferative properties and the results are contradicting.

**Aim and objectives:** Present study was aimed to assess in vitro antioxidant and antiproliferative potential of aerial parts of *B. maderaspatensis*.

**Material and Methods:** In vitro antioxidant potential was evaluated by DPPH, H<sub>2</sub>O<sub>2</sub> and NO radical scavenging ability of the ethanolic extract. Antiproliferative activity was assessed by MTT assay on MCF7, PA1, HT29, A375 HepG2 and NIH-3T3 cell lines. All the cell lines were treated with increasing concentration of the extract for 24 hours and cell viability was tested by MTT assay. Morphological features of the cells were observed microscopically.

**Results:** Ethanolic extract of *B. maderaspatensis* showed good H<sub>2</sub>O<sub>2</sub> radical scavenging activity (IC<sub>50</sub> 33.35 µg/mL). Extract was effective against all the tested cancer cell lines in dose dependent manner but not against NIH-3T3, the normal mouse embryonic fibroblast cell line. Among the cancer cell lines, A375 and HT29 were more sensitive (IC<sub>50</sub> 31.59 µg/mL and 55.74 µg/mL respectively) to the extract than other cancer cell lines.

**Conclusion:** Ethanolic extract of *B. maderaspatensis* is effective in preventing cancer cell proliferation while sparing the normal cell. It can be further tested to understand its mechanism of action. Future investigations involving purification, identification of active principle and determination of mechanisms of action of the extract can be helpful in drug discovery program.

## Psychophysiological stress induced neurobehavioral changes in adolescent rat and their impact in Adult rat enhanced by Cinnamaldehyde

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**Background:** Adolescent brain undergoes vigorous maturation and also adolescent brain is more susceptible to stressors, distresses in the brain development leading to more susceptibility for stress related psycho physiological disorders in later life.

**Aims and objectives:** This study aims to investigate whether a stressful experience during adolescence postnatal day (PND 28 - 42) affects adult (PND65) neurobehavioral alterations and effect of cinnamaldehyde (CA) in stress retrieval.

**Materials and Methods:** Male Wistar albino rats were exposed to psychophysiological stress (Restraint stress) from PND 28–42 (6hrs/15 days) and cinnamaldehyde (25mg/kg.bw) administered throughout adolescent period and outcome after stress are evaluated in PND42 and PND65 rats. Neurobehavioral alterations such as, learning and memory (Radial Arm Maze, Novel Object Recognition & Novel Object Location Task), anxiety and depressive like behaviour (Place Preference Task, Elevated plus Maze & Hole board task) and Sociability (Three-chamber test) are assessed in experimental groups and results were compared between groups.

**Results:** Adolescent stress exposed rats (PND28 – 42) exhibited impaired learning and memory, increased anxiety and depressive behaviour compared to control. Same rat turned into PND65 showed decreased changes compared to control PND65 rat. Adolescent stress along with CA treated rats were showed improved neurobehavioral changes when compared to stress alone group.

**Conclusion:** The results showed that cinnamaldehyde treated rats exhibited restored neurobehavioral changes such as improved learning and memory, social behaviour and decreased anxiety and depressive like behaviour. CA may act as a promising drug like action for neurobehavioral deviations caused by stress.

## Effect of early exposure of *Acoruscalamus* on behavioural development of wistar rat off springs

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**Background:** *Acoruscalamus* is commonly called as a sweet flag/VACHA and it plays a major role in alternative medicine. The extract prepared from rhizome part possesses activity like anticonvulsant, antispasmodic and antidepressant etc. Action of phytochemicals of this extract on various systems like CNS, Gastrointestinal were analysed in adult rats. But the effects of *A.calamus* on developing brain in young rat offsprings have to be studied. Aim: To assess the effects of early exposure of *A.calamus* on behavioural development of wistar rat off springs. Materials & Methods: Rat offsprings were divided into two groups. On 3<sup>rd</sup> postnatal day Group 1 (n=6) was given normal saline orally. Group 2 (n=6) was given Ethanolic extract of *A.calamus* by orally in the dose of 600mg/kg. Both group rat offsprings were observed for weight gain, ear and eye opening time. After one week of postnatal period Geotaxis test and olfactory discrimination test were done.

**Results:** Weight was significantly increased in group II when compared to control group ( $p < 0.05$ ). Olfactory discrimination latency time was lower in treated group. Average days of Eye and ear opening were better in study group.

**Conclusion:** Ethanolic extract of *A.calamus* can be considered as appetite stimulant in young rats. It may also have the positive role in developing brain. The exact mechanism of action on nervous system of rat offsprings will be studied in future.

## Leptin adiponectin ratio (L/A) can be a biomarker for autonomic dysfunction in population with obesity.

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**Background:** Prevalence of obesity incidence imposes marked cardiometabolic risk. Low level of adiponectin and increased leptin has been attributed to increased cardiovascular risk. In addition, leptin-Adiponectin ratio (L/A ratio) has been reported to identify as a marker of adipose tissue dysfunction. However, there is no agreement in scientific literature related to the circulating leptin levels in obesity.

**Aim & Objectives:** We aimed to assess the adipokine levels and its association with cardiometabolic risk factors in obese population.

**Materials & Methods:** A total of 90 apparently healthy participants of either gender in the age of 18-40 years are recruited. The individuals were categorized into obesity group (n=45) and non-obesity group (n=45) based on their body mass index (Asian criteria). Autonomic function was assessed non-invasively by heart rate variability. Leptin and adiponectin were measured as a marker of adipose tissue dysfunction. Fasting blood glucose, insulin, lipid profile and HOMA-IR were studied to examine their metabolic profile.

**Results:** Groups were comparable for age and height. Fasting Insulin and HOMA-IR were higher in the obesity group. Significant reduction in total power and elevated LF:HF ratio were found in obesity group. Adiponectin was significantly lower while leptin was higher in the obesity group. L/A ratio is higher in the obesity group. Further, we observed correlation between leptin, L/A ratio with autonomic function and metabolic profile variables.

**Conclusion:** Our findings demonstrate that raised leptin levels and L/A ratio might be implicated in the pathogenesis of cardiovascular disease in population with obesity and it can be considered as a marker of autonomic dysfunction in obese population.

## Comparison of the equation derived CUN-BAE index with bioelectrical impedance analysis for body fat percentage in metabolic syndrome among South-Indian adults

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**Background:** Excess body fat percentage (BF%) is related to metabolic syndrome (MetS). BF% can be measured by several techniques such as dual-energy X-ray absorptiometry (DXA), air displacement plethysmography (ADP), and bioelectrical impedance analysis (BIA). The application in clinical practice is limited due to cost, safety, and complexity. Thus, the Clínica Universidad de Navarra – Body Adiposity Estimator (CUN-BAE) has been proposed as an indicator of BF%. However, the studies comparing CUN-BAE with BIA for BF% remain elusive.

**Aim and objectives:** Our aim is to compare the CUN-BAE with BIA for BF% in MetS among South-Indian adults and observe the agreement between CUN-BAE and BIA.

**Materials and methods:** We conducted a comparison study of CUN-BAE with BIA for BF% in a cross-sectional sample of 131 subjects from both genders. We measured anthropometric data for CUN-BAE and collected fasting blood samples for biochemical profile to diagnose MetS. Regression analysis and Bland-Altman plots were used to evaluate the agreement between CUN-BAE and BIA.

**Results:** The mean BF% determined by BIA was  $30.56 \pm 8.71\%$ , and the mean BF% estimated by the CUN-BAE was  $31.21 \pm 7.95\%$ . We found that BF% calculated with CUN-BAE showed a correlation with BF% determined by BIA ( $r = 0.84$ ,  $P \leq 0.0001$ ). Moreover, the Bland-Altman plots showed no proportional bias and indicated the agreement between CUN-BAE and BIA to measure BF%.

**Conclusion:** Thus, the CUN-BAE is an easy-to-apply equation derived measure of BF% that may be used as a screening tool in clinical practice where an accurate measurement of BF% is complicated.

## Effect of Caloric Vestibular Stimulation on Anxiety and Brain Histopathological Changes in Parkinson's disease induced rats- An experimental study

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**Background:** Parkinson's disease (PD) is a neurodegenerative disorder affecting elderly population. It is caused by progressive degeneration of neuromelanin dopaminergic neurons in substantia nigra pars compacta leading to consequent loss of their axonal projections to corpus striatum affecting the nigrostriatal dopaminergic pathway. The existing dopamine-based pharmaceutical treatments do not address the fundamental cause of neurodegeneration, while anti-dopaminergic treatments like deep brain stimulation of subthalamic nucleus is not suitable for aged patients. Therefore, a need for non-invasive and conventional treatment with less side effects is required. As galvanic vestibular stimulation has been known to improve gait in PD, we have tried a simple method of caloric vestibular stimulation and assessed its neuroprotectiveness in PD induced rats. Therefore, the current study was conducted to assess the efficacy of bilateral caloric vestibular stimulation in protecting the loss of dopaminergic neurons and improving anxiety in Parkinsonism induced rat.

**Objectives:** To evaluate the effect of caloric vestibular stimulation on behavioral changes and alterations in histopathological findings in Parkinson's disease (PD) induced rat.

**Materials and Methods:** 20 adult male Wistar albino rat (250 - 300g) were randomly assigned into four groups. Group 1 Control (n=5): with no intervention, Group 2 PD (n=5): administered 3mg/kg body weight/day i.p. rotenone mixed with vehicle (98% Olive oil and 2% DMSO) for 24 days, Group 3 CVS PD (n=5): PD induced and caloric vestibular stimulation given for 30 days. Group 4 CVS (n=5): Only caloric vestibular stimulation given for 30 days. Anxiety level was evaluated on 0<sup>th</sup>, 15<sup>th</sup> and 30<sup>th</sup> day by elevated plus maze and histopathology staining in the corpus striatum and substantia nigra of rat brain was done.

**Results:** The findings were tabulated and statistically analyzed using IBM.SPSS statistics software 23.0. To find out the significant difference between the various groups multivariate analysis by Kruskal Walli's test was done followed by the Mann-Whitney U test. For the repeated measures (0<sup>th</sup> day, 15<sup>th</sup> day & 30<sup>th</sup> day) the Friedman test was used. The probability value at  $p < 0.05$  was considered statistically significant. The analysis showed a significant improvement in fall off time, number of entries into open arm, time spent in the open arm and time spent in the closed arm in PD induced and caloric vestibular stimulation group (3) when compared with the PD only group (2). Histopathological findings suggest that group (3) has shown reduced neuronal degeneration when compared to group (2).

**Conclusion:** Hence this study reveals that warm water caloric vestibular Stimulation reduces anxiety in Parkinson's disease (PD) induced rat and prevents neuronal degeneration. In this aspect, Caloric vestibular stimulation is proven to be a conventional treatment method with neuroprotective feature thus recommended for further investigations to be followed as treatment method for cure of Parkinson's disease in human.

## DHT induced Polycystic Ovary Syndrome [PCOS] in Sprague Dawley rats: Underpinning the role of Amygdala

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**Background:** PCOS is typical with Hyperandrogenism; however, it may be the cause or the consequence of PCOS. In this study, we hypothesized Androgen Dihydrotestosterone [DHT] to be the culprit in inducing PCOS. We assumed that tracing the route of DHT will give us cues about the origin of PCOS. On exploring regions with abundant DHT receptors, Amygdala received significant importance. Though amygdala has been reported for its substantial role in - [i] Sexual and other behaviors [ii] Reproduction in lower phyla, its association with PCOS remains unleashed.

**Aims and objectives:** To analyze alterations in the behavior, total antioxidant capacity (TAC) and biochemical parameters in DHT-induced PCOS rats.

**Materials and methods:** 3 week old female SD rats were divided into: [i] Control; [ii] Control DHT (83µg/s.c./d) in peanut oil; [iii] Androgen receptor antagonist Flutamide (10mg/kg/s.c.) in peanut oil; [iv] Peanut oil (200µl). 90 days after the treatment protocol, behavior was analyzed and then the animals were euthanized for the collection of blood, amygdala, liver and ovary. Results: PCOS was confirmed by Ultrasound scan after 90 days of DHT induction. We found DHT induced PCOS rats to exhibit: [i] Behavioral alterations - Light and Dark behavior, Open Field test and Elevated plus maze; [ii] Decrease in TAC in serum, liver and ovary but increase in amygdaloid TAC; [iii] Significant variations in the levels of GnRH, LH, FSH, leptin, ghrelin, testosterone, glucose and lipid profiles.

**Conclusion:** Targeting DHT-driven mechanisms in the brain, specifically amygdala will be a promising strategy for the development of novel treatments for PCOS.

## Evaluation of depressive symptoms Among Adolescents using Patient Health Questionnaire-9 Item

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**Background:** Depression among adolescents is an arising problem globally. There is a need to understand depression and the factors associated with it among adolescents. The present study aims to study the assess the symptoms of depression in adolescence by The Patient Health Questionnaire 9-item (PHQ-9) depression questionnaire.

**Objective:** To assess subjective symptoms of depression among adolescence aged 16-21 years using Patient Health Questionnaire 9-item (PHQ-9).

**Material and methods:** Cross sectional observational data was collected from 456 Professional students in the age group 16-21 years at SDUMC after obtaining ethical clearance. A purposive sampling technique was used to collect the data from the responders. A validated pretested modified patient health questionnaire (PHQ-9) was used to screen the participants for depression.

**Results:** A Mean scores of the PHQ-9 items and the sum score among Adolescents was done & The mean sum score of the PHQ-9 in the adolescents was 15.06. According to the cut-off criteria the percentage for mild (1-4) 15.7%, minimal(5-9) 1.53%, moderate (10-14)30.48%, moderately severe(15-19) 30.26%and severe (20-27)22.14% depression among the adolescents.

**Conclusion:** The PHQ-9M could be useful in conducting screening for depressive disorder and for monitoring depressive symptoms. After further evaluation of its psychometric properties most of the adolescents' group are under moderately severe depression. Thus, Brief information should be made on pressures faced by teenagers today; signs and symptoms of depression in young people; identification of early warning signs; common myths associated with depression; practical strategies for offering support; resources to get help

## **Influence of desynchronized circadian rhythm on executive lobar functions and cognition among pinkcollar caregivers of KLEH indulged in shiftwork: A cross sectional study**

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**Background:** To offer 24 hour healthcare services, working in shifts become imminent, leading to desynchronized circadian rhythm causing sleep deprivation, impaired cognition and execution, leading to increase in medical errors and negative impact on shift workers' health.

**Aim:** Study influence of desynchronized circadian rhythm on execution and cognition in pinkcollar caregivers in health setup indulged in shift work.

**Methodology:** Institutional ethical clearance was obtained. Study population of nurses doing nightshift duty at KLE Hospital and age and gender matched day time working controls were selected and enrolled for data collection according to predetermined inclusion-exclusion criteria and sample size was calculated. Voluntary informed written consent was taken from participants. Pittsburgh Sleep Quality Index (PSQI) was administered to measure different aspects of sleep over past 1 month. Montreal cognitive assessment (MoCA) battery of tests were conducted addressing 7 cognitive domains to detect any cognitive impairment. Audio visual reaction time (AVRT) was assessed by a portable research RT apparatus. Statistical analysis was done by mean  $\pm$  SD, p value=.05 was considered statistically significant. Results: Socio demographic information was obtained. Mean global PSQI obtained by shift workers was  $6.68 \pm 3.65$  and by controls was  $5.56 \pm 4.25$  (p value= .004). In MoCA test average total score by shift workers and controls was ( $23.64 \pm 2.45$ ) and ( $27.76 \pm 3.11$ ) respectively (p value =.001). Mean ART was 53.78% higher and mean VRT was 27.84% higher in shift workers.

**Conclusion:** Shiftworkers were found to have poor sleep quality, significant reduction in cognitive functions, poor short-term memory recall, less visuospatial abilities, poor execution, low concentration as compared to day-time working controls. Also, shift workers have a greater latency in ART and VRT, indicating their ability to concentrate is limited.

## Alteration in memory due to Mild Traumatic Brain Injury; Evidences from neuropsychiatric tests

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**Background:** Mild traumatic brain injury (mTBI) causes an alteration in the brain function without evident structural changes. With this study an attempt was made to determine cognitive impairments pertaining to specific areas of the brain involving working and episodic memory as correlations have been drawn since long amongst them and no significant data regarding the same is available.

**Aims and objectives:** To assess the cognitive deficits and audio-visual reaction time in subjects who have suffered mTBI with a GCS of 15/15 admitted in Prabhakar Kore Charitable hospital, Belgaum.

**Material and methods:** A cross sectional study from February to July 2019 was carried out on 12 patients in neurosurgery department of KLEH, statistical analysis done using SPSS version 20 and analysis with an Unpaired T test.

**Tests performed:** 1. STAI (for perceived anxiety) 2. Delayed free verbal Recall (episodic memory) 3. SDMT (working memory) 4. Rey-Osterrieth complex figure (working memory) 5. Audio-Visual reaction time (working memory)

**Results:** Mean  $\pm$  SD, STAI state form  $38.69 \pm 8.68$ ; higher (than normal); 3-word recall trial one  $1.5 \pm 0.512$ ; trial two  $1.66 \pm 0.557$ ; lower; SDMT score  $45.7 \pm 1.2$ ; lower; ROCF (copy)  $31.7 \pm 3.21$ ; lower; ROCF (recall)  $20.5 \pm 6.7$ ; lower; Visual time on AVRT  $301.5 \pm 101.25$ ms; higher; Auditory time on AVRT  $286.1 \pm 95.9$  ms; higher .

**Conclusion:** Both Episodic and Working memory showed deviation from normative findings. Functional alterations in the pathway of formation and retrieval of memory involving the decoupling of the dorso-lateral pre-frontal cortex (DLPFC) caused alterations in freely recalling words due to disrupted encoding, impaired divided attention and inability to shift between attentional sets, reduced executive functioning of cognitive processes and altered processing speed leading to increased reaction time which was all further aided by the increased amount of anxiety post trauma

## Effect of Low carbohydrate high fat (LCHF) diet in Glycemic, Lipid profiles & inflammatory markers in Type 2 Diabetes mellitus patients

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**Background:** India is witnessing an alarming increase in Type 2 Diabetes mellitus (T2DM) patients. With conventional high carbohydrate low fat diet and medical treatments, the hyperglycemia and insulin resistance in T2DM is not kept under control. In order to have a better change in the treatment and lifestyle, we planned to assess the effect of low carbohydrate high fat (LCHF) diet with moderate amount of protein intake along with their medical treatment for 60 days, which is aimed to reduce the post prandial hyperglycemia and insulin resistance.

**Aims and Objectives:** To assess the effect of LCHF diet on type 2 diabetes mellitus patients.

**Materials and Method:** Prospective observational study - done as a part of ICMR-STs 2019. 50 known T2DM patients, within the age group of 35-55 years (of minimum 5 years duration of T2DM) without any cardiovascular complications, who are voluntarily willing to follow this diet plan, after getting informed written consent were included in this study. All the blood and physical parameters were assessed before and after the study.

**Results:** It is observed that, following the LCHF diet for two months showed significant reduction in the weight (10.2%) [ $p < 0.001$ ], BMI (10.0%) [ $p < 0.001$ ], waist circumference (9.7%) [ $p < 0.001$ ], HbA1c (28.1%) [ $p < 0.001$ ], HS-CRP (20.3%) [ $p = 0.01$ ], TGL (23.9%) [ $p < 0.001$ ], ALT (16.4%) [ $p = 0.03$ ], GGT (27.4%) [ $p = 0.003$ ] and increase in the HDL (10.1%) [ $p < 0.001$ ] levels in the body.

**Conclusion:** The study showed LCHF diet is preferable and is effective in managing the metabolic parameters of T2DM patients than the current scenario of following a low fat high carbohydrate diet.

## Active management of Anaemia among working women in medical college– Evaluating compliance to life style modification, treatment and follow up.

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**Background:** Nutritional anaemia among working women is high. Compliance to active management of anaemia needs evaluation.

**Objectives:** To assess reasons of non-compliance to active management of anaemia like dietary modification, treatment and follow up in working women of medical college.

**Methodology:** After completing all formalities, anaemic working women with no other ailment or pregnancy history were included in the study. Cyanmethemoglobin was used to determine Hb. Based on WHO and Ministry guidelines, deworming, dietary modifications and iron- folic acid treatment was given free of cost for 2 months. Subjects were called for follow-up after 1 month of initiation. Based on previous studies, structured questioner was used to assess non-compliance to dietary modification, treatment and follow-up.

**Results:** Total of 146 subjects were recruited, working in all cadres for the college i.e from teaching staff to housekeeping and security. 46.43% were compliant to dietary changes for more than 25 days, while 23.33% did not follow it even for 15 days. 66.7% of mild anaemia patients took regular tablets for 1 month while moderate to sever anaemic patient, compliance was less than 40%. Only 33.5% of patients showed up for follow up.

**Explanation:** Most common reasons for non-compliance to diet was being overworked, lack of time management, while non-compliance to treatment was side effects to treatment and forgetting to take tablets. Non-compliance to follow-up was fear of prick and sense of well-being.

**Conclusion:** Our study provided free investigation and treatment to patient, yet the compliance remained low. Approach to these subjects should be based on specific reasons for noncompliance.

## The impact of particulate matter on pulmonary function in people living near mine tailing region

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**Background:** KGF was previously a gold mining town in South India. Although mining has stopped now the tailings are still there. Respiratory diseases like chronic restrictive pulmonary disease [CRPD] resulting from exposure to particulate matter [PM] such as dust or in mining residues is a public health issue for people living near mines.

**Aims and Objectives:** To determine the air quality and its impact on the people living near mine tailing region by the pulmonary function test.

**Materials and Methods:** After institutional ethical clearance and informed consent 400 subjects between the age group of 18 to 60 years living in KGF for more than 3 years were selected. The dust samples were analyzed by gravimetric method. The lung function tests like FEV<sub>1</sub>, %FVC, FEV<sub>1</sub>/FVC and %PEFR were performed using computerized spirometry. After the performance of the lung function they were categorized into the normal and the abnormal based on ventilatory abnormality.

**Results:** The average PM concentration in the mining area was 1.49 mg/m<sup>3</sup>. The pulmonary function test showed that 36% [144] were normal and 63% [250] had abnormal pattern. The lung parameters for FVC, FEV<sub>1</sub> and PEFR were all lower in the abnormal population except for the FEV<sub>1</sub>/FVC.

**Conclusions:** The study shows that poor air quality has significant impact on respiratory health of people living in mining areas. The pulmonary function tests of people suffering from restrictive lung disease are reduced compared to normal people living in these areas.

## Infrapatellar fat pad a novel source of autologous clinical grade stem cells for tissue engineering: a new insight on therapeutic intervention

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**Background:** The infrapatellar fat pad of the knee joint, is composed of approximately 20 cm<sup>3</sup> of elastic adipose tissue with high level of vasculature and extensive nerve innervation. They can be easily harvested arthroscopically or obtained as a medical waste during knee Arthroplasty. Infrapatellar fat pad-derived stem cells (IFPSCs), which can be isolated from this medical waste are a reliable source of autologous stem cells.

**Materials and Methods:** The stem cells used in this study were isolated from the infrapatellar fat pads harvested from elderly patients (>70) with severe osteoarthritis. The IFPSCs were characterised using standard mesenchymal stem cell surface marker criteria as prescribed by the International Society of Cell Therapy (ISCT). To prove their ability to generate clinical grade stem cells they are subjected to three germ layer differentiation. Furthermore to test their sustainability of IFPSCs in scaffolds, they were grown on gelatin based – 3D matrices differing in their tensile strength. Live /dead assay was performed to ensure the viability. The stemness of the cells seeded on the matrix were characterised using quantitative gene expression studies.

**Results:** Characterisation studies revealed that these cells expressed mesenchymal stem cell (CD 166, CD 44, CD 133, CD 90 and CD 105) and ESC markers [Sox2, Nanog, Oct4 and nucleostemin (NS)], whereas the hematopoietic stem cell marker CD 45 was absent. They are able to produce neurogenic (ectoderm), hepatogenic (endoderm) and osteogenic (mesoderm) cells. We proved that these clonally derived-stem cells possess stemness, self-renewability and homogeneity in early passages that can be used for clinical applications. Prolonged proliferation of stem cells with stemness has been observed that in the gelatin-rich constructs.

**Conclusion:** Our findings support the use of IFP as a novel source for multipotent cells and essentially a suitable approach for direct cell reprogramming in tissue engineering applications and regenerative medicine.

## Awareness of chronic kidney disease among Tamil nadu population – a cross-sectional study

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**Background:** Chronic kidney disease is a major health problem in India and around the world. The most effective and affordable treatment may require screening for early detection/intervention/prevention. A screening program will help to address the burden of chronic kidney disease. Public awareness is a key determinant of screening programs. There is, however, a shortage of data on CKD's public information in South India. The aim of this study was to assess the awareness and knowledge of CKD among the Tamil Nadu population.

**Methodology:** A questionnaire-based cross-sectional study was conducted through an online form; the questions were generally based on the physiological role of kidney and awareness questions related to CKD. The survey was conducted in Tamil Nadu with the inclusion of participants of age > 18 years.

**Results:** A total of 500 participants completed the survey, participants with a family history of CKD were excluded, and thereby, 432 participants were included in the study. The mean age of the subjects was  $47.80 \pm 8.5$  years and total number of males and females were 180 and 252 respectively. The population's mean knowledge score was 13 ( $SD \pm 5.0$ ), with values ranging from 0 to 22.

**Conclusion:** The study concluded with the information that the participants had adequate knowledge on risk factors, signs and symptoms of CKD, and limited knowledge in the physiological role of the kidney and diagnosis of CKD. Therefore, efforts are necessary to create awareness and educate people about the early detection and prevention of CKD.

## A study on adverse drug reactions related to the use of NSAIDs at a tertiary care centre

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**Background:** Nonsteroidal anti-inflammatory drugs are the most widely used medications to treat pain and inflammatory conditions. Improper use of NSAIDs has resulted in gastric upset and death. Hence monitoring is essential to minimize such consequences and to recognize the incidence of the adverse drug reactions due to NSAIDs.

**Aims and objectives:** To identify and analyze reported Adverse Drug Reactions associated with NSAIDs in inpatients of a tertiary care teaching hospital.

**Materials and methods:** A retrospective study was carried out for a period of 6 months from September-2019 to February-2020 using Suspected Adverse Drug Reaction Form, reported for NSAIDs were analyzed. They were assessed based on WHO Causality Assessment Scale.

**Results:** A total of 21 ADRs were reported during the study period with no difference in the number of the ADRs in relation to the gender. More number of ADRs were from Orthopedic ward and Rheumatology ward. The NSAIDs mostly accounted were Diclofenac (42.85%) followed by Ibuprofen (33.33%) and Etoricoxib (23.80%). The type of reactions include, hypersensitivity reactions (79.43%), Urinary retention (11.93%) and GI problems (08.64%). The severity assessment revealed that most of them were mild (52.38%) and moderate reactions (47.61%). causality assessment was done which showed that 73.53% of the reactions were probable, possible (26.47%). Most of the patients (45.35%) were treated with Antihistamines, & corticosteroids (33.41%) or only anti-histamines (21.24%).

**Conclusion:** Pharmacovigilance is an important tool for the treating physician to develop safe medical practice. The incidence of ADRs on long term use of NSAIDs has been reported to be high. This practice will prove to be very valuable in making the drug therapy safer and rational.

## Clinical characteristics and complications in children with early stages of Chronic Kidney Disease

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**Background:** Focus on clinical characteristics and complications in children with early stages of chronic kidney disease (CKD) are not much in India. The objective of this study was to identify the clinical characteristics and complications in children with early stages of CKD.

**Methods:** A single centre, cross-sectional study conducted in Pediatric nephrology OPD, Institute of child health, Egmore from November 2013 – December 2013. The study enrolled the children with stage 2 to stage 4 CKD. Children who were between the ages of 5 year and 15 years and who fulfilled the inclusion criteria were included in the study. Baseline demographic data, previous history were collected from their parents, clinical characteristics and laboratory data were collected from their medical records.

**Results:** A total of 65 children were included in the study. At the time of enrolment 23(35.38%) of the children were in the age group of 11-13 years; 43 children (66.15%) were males. A total of 66.15 % of the children were in CKD stage 2, 9.23 % were in stage 3 and 24.61 % were in stage 4. Congenital structural defects were the leading cause of CKD, comprises of 51.9 %, followed with glomerular disease 33.84%. About 66.15% of the children were in acidosis, 64.61% of the children showed increased serum creatinine level and 70.77% of the children were moderately anaemic. Severely stunting was noted in 47.69% of children, severe underweight in 41.53% children and 23.08% of children were in severe malnutrition for SGNA. Also, 15.38% and 49.23% of the children were pre-hypertensive for systolic and Diastolic blood pressure. With advancing CKD stages, the complications increased in these children.

**Conclusion:** Creating awareness about complications, early identification and its management among the caretakers of Children with CKD are essential to reduce the incidence of comorbidities and its worsening progression.

## **Effectiveness OF IEC (information, education, and communication) on knowledge regarding autism and care of autistic children among parents in selected special schools, Puducherry**

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**Objectives:** 1. To assess the level of knowledge regarding autism and care of autistic children among parents, before and after the IEC. 2. To assess the effectiveness of IEC in terms of improving knowledge regarding autism and care of autistic children among parents 3. To associate the level of knowledge with the educational status of parents of autistic children.

**Material and methods:** Quasi experimental study with one group pre-posttest design was undertaken in selected schools among 46 parents by non-probability convenient sampling technique. Data collected by using structured knowledge questionnaire before and after intervention (IEC). Validity of the tool obtained from 5 experts and the reliability of the tool was 0.9 by spearman brown prophecy formula. Permission obtained from head of school and written consent was taken from parents.

**Results:** 54.3% of the study subjects had moderate knowledge, 43.5 % had inadequate knowledge , and only 2.2% parents had adequate pre interventional had moderate knowledge but after the intervention 71.1% had adequate knowledge and 28.3% had moderate knowledge and no one with inadequate knowledge is less than 0.0001 which he T value. There was no association found between demographic variables and level of knowledge.

**Conclusion:** IEC was effective in improving the knowledge among the parents of autism children which was statistically proved at 0.0001 level of p value.

## Evaluation of anticancer potential of Indian medicinal herb extracts against ELA cancer cell line

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**Background:** The rising burden of cancer worldwide calls for an alternative treatment solution. The incidence of breast cancer has increased while the mortality rate has continued to remain high. Effective treatment of this disease is the key to survival. Plant-derived natural products have long been and will continue to be extremely important as sources of medicinal agents and models for the design, synthesis, and semi-synthesis of novel substances for treating humankind diseases. Therefore, this study is a necessity in continuing research into new effective treatments.

**Aim and Objectives:** The present study aimed to investigate the antibreast cancer potential of plant extract which is isolated and purified from the *Thespesia populnea* plant, for selected human breast cancer cell line.

**Materials and methods:** The leaves were extracted with Ethyl acetate and Petroleum ether. The cytotoxicity was tested with ELA cancer cell line using MTT assay using different concentration which was followed by DNA fragmentation. Apoptotic cell death was also induced in cancer cells by these effective extracts via the mitochondria-mediated pathway.

**Results:** The most marked effect is noted both in ethyl acetate extract and also in petroleum ether. In ELA cancer cell line study, the extracts exhibited good cytotoxic activity with an  $IC_{50}$  value of 81.80 and 72.16  $\mu\text{g/ml}$ , respectively. Percentage of apoptosis induced by the Compounds in cancer cells was found to be 70.52 and 81.48 respectively.

**Conclusion:** Our results provided new evidence for anticancer activities of the plant which could be useful for developing new anticancer therapies.

## Small colony variant of *Escherichia coli* isolated from a recurrent urinary tract infection

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**Introduction:** Small colony variant of *Escherichia coli* may cause persistent and recurrent infections in human. These slow growing phenotypic variants are difficult to identify and mislead the diagnosis which can lead to choice of inappropriate antibiotics. In this case report we are presenting a case of recurrent urinary tract infection which was associated with small colony variants of *E. coli*.

**Case description:** A two year old male child was admitted to the hospital with a complaint of passing thin stream of urine. One month earlier the child had been previously diagnosed with bilateral grade five vesicoureteral reflux. Child had developed recurrent urinary tract infection caused by small colony variants of *E. coli*.

**Discussion:** To our knowledge, this is a first report of recurrent urinary tract infection caused by small colony variant of *Escherichia coli* with ESBL producer after surgical treatment of bilateral grade five vesicoureteral reflux. There are only few case reports of small colony variant of *Escherichia coli* in the literature. The repeated admission of the patient with the laboratory results indicates that the present case was that of recurrent urinary tract infection.

**Conclusion:** child had undergone bilateral ureter reimplantation as part of treatment to vesicoureteral reflux. Since vesicoureteral reflux condition is one of the risk factor to develop urinary tract infections. Repeated exposure to antibiotic might have been induced stress condition to bacteria and emerged as slow growing sub population of *E. coli*.

## Effectiveness of Tele-Yoga Therapy on Functional Impairment and Sleep Quality in Patient with Insomnia during COVID19 Lockdown: A Case Report

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**Background:** Insomnia is one of the most common psychosomatic diseases that often disturb family routine, lifestyle and lead to negative health consequences. The intensity of sleep disturbance is increased during COVID19 lockdown.

**Aims:** To evaluate the effectiveness of tele-yoga therapy on functional impairment and sleep quality in patient with insomnia.

**Materials and methods:** A 30 year old female pursuing PhD along with taking care of family including a son aged 7 year, was referred by a psychiatrist for yoga therapy. Tele-yoga therapy included yogic counseling, diet modifications, herbal medicine, asana and pranayama; tele-yoga therapy session for 1 hour per day, 2 days per week for 3 months were given while 2 times per day for daily at home was advised. Insomnia severity index (ISI) was assessed as well as self-reported blood pressure by the patient before and after intervention.

**Results:** Assessment of pre-intervention ISI score was 21, indicating clinical insomnia, with moderate severity and self-recorded blood pressure (BP) 143/84 on average of three days before intervention using digital BP apparatus. Post ISI score 14 and BP 128/80 on average of latest three days after 3 months of tele-yoga therapy. The difference of ISI score showed improvement in clinical insomnia to subthreshold and reduced systolic BP by 15 mmHg.

**Conclusion:** Findings support the reliability of tele-yoga therapy in insomnia. The patient reported experience of calmness of mind and mental peace. This report showed good concordance with measures of daytime function, as well as improved sleep quality and duration.

## Study of Bone Marrow in Various Hematological Disorders by Aspiration and Trephine Biopsy (In Failed Cases Of Aspiration)

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**Introduction:** Bone marrow examination is useful in the diagnosis of both hematological and non-haematological disorders. The two most important technique used for the diagnosis are bone marrow aspiration and bone marrow trephine biopsy. [1] bone marrow aspiration and biopsy examination complement each other.

**Aim and Objective:** 1. To know the pattern of distribution of hematological diseases. 2. To study the advantage of bone marrow trephine biopsy over bone marrow aspiration especially in dry tap.

**Material and methods:** All the clinical data were recorded according to the Performa patient consent obtained and procedure done under aseptic condition.

**Result:** The present study was carried out during the period of 2 years from September 2012 to September 2014. During this period total 86 cases were studied. of which in 63(73.3%) cases adequate material and 23(26.7%) cases showed dry tap. Mean age of 34, M: F- 1.1:1. Out of 23 cases of dry tap in 19 (82.6%) bone marrow trephine biopsy was done and remaining 4 (17.4%) bone marrow trephine biopsy was not possible. Megaloblastic anemia 26 (49%) was the commonest type of anemia. Out of 19 cases of dry tap biopsy, 13 (68.5%) provided the diagnostic clue and 4(21%) revealed normal study. lymphoproliferative disorder 6 cases (46.3%) followed by metastasis 3(23.1%), 2 (15.4%) of megaloblastic anemia, 1 (7.6%) each of MDS and plasmacytoma.

**Conclusion:** Despite the growing new ancillary techniques and dependence of newer technology the traditional role of BMA and histological evaluation of BMB remains as important as it has in the past.

## Study of Serum Protein Electrophoresis In Various Diseases

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**Introduction:** Electrophoresis is a technique for separation of different charged particles. Since proteins are negatively charged at pH 8.6, subjecting them to electrical field will push protein particles towards anode. Weight and charge on different protein fractions separates them out into albumin, alpha 1 and alpha 2-globulin, beta and gamma – globulin.

**Aim and objective:** To know the diagnostic utility of serum protein electrophoresis in diseases like liver diseases, kidney diseases, gammopathy like multiple myeloma, and amyloidosis. Material methods: In present study, total 100 cases were studied during the period of 2 years. Done in serum samples which showed abnormal serum total protein & S. Albumin in Symptomatic cases without prior definitive laboratory diagnosis of their diseases were included in the study.

**Results:** Total 100 cases, 84 (84%) cases showed abnormal pattern. Of which chronic inflammation 13 nephrotic syndrome 10, CRF 07, LPD 06, acute phase reaction 06, MM -05, 5 cases each of plasmacytoma and other malignances, 6 cases of liver diseases, 3 cases each of acute inflammation and preeclampsia, 2 cases each of IDA and cardiac diseases, 11 cases of others.

**Conclusion:** Compared to total serum protein and different fraction like albumin & globulin estimated by bio-chemistry, serum protein electrophoresis is at a same time shows quantitative analysis of serum protein fractions like albumin, alpha-1, alpha-2, beta, gamma globulin and their graphical representation of pattern shows own diagnostic significance.

## Effectiveness of Structured Teaching Module on Knowledge Regarding Mental Illness and to explore Myths and Practices among the Care Givers.

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**Objectives:** To assess the myths and practices. Ø To assess the pre- test knowledge among the care givers of mentally ill clients. Ø To evaluate the effectiveness of structured teaching module on knowledge. To find out the association between pre- tests level of knowledge with selected demographic variables.

**Material and methods:** Mixed method was adopted to conduct present study at Earvdi Dargah. Phase I data collected with 10 samples by convenient technique with interview method. Collected data analyzed based on themes. Phase II quantitative approach, where structured interview schedule was applied for 30 participants by purposive sampling technique. Informed consent was obtained from the study subjects with assurance of confidentiality.

**Results:** Findings related to myths and practices: There are many myths and false beliefs about the causation of mental illness and the treatment of mental illness and some discrimination of mental illness according to their culture, religion and Individual perceptions, which lead to the false practices to cure mental illness. Findings related to knowledge on giving care: The overall findings were illustrated as follows: The pretest mean: 6.97, SD = 1.94 and the post- test mean = 11.77 and SD = 2.89. It was highly significant at  $p < 0.000$  level.

**Conclusion:** The structured teaching module was found to be effective for care givers in order to create awareness on knowledge regarding mentally ill which is evident by higher post test score. Study also revealed that creating awareness is more important to curtail unnecessary practice and stigma in society.

## Association of serum magnesium and calcium to magnesium ratio with age-related cataract-A pilot study

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**Background:** Cataract is a leading cause of visual impairment due to opacity of eye crystalline lens and age-related cataract is the most common type. Alteration in serum magnesium concentration and calcium to magnesium ratio (Ca/Mg ratio) play an important role in the pathogenesis of age-related cataract.

**Objectives:** The objective of the present study is to estimate magnesium and calcium level in serum and to find out association between serum magnesium and calcium to magnesium ratio with age-related cataract patients.

**Subjects and methods:** This case-control study consists of 90 Age-related cataracts (ARC) as cases and 90 age and gender matched healthy individuals without cataract as controls (age group above 45 years). The ARC patients were sub-grouped into nuclear cataract (NC), cortical cataract (CC), posterior sub-capsular cataract (PSC) and mixed cataract (MC) according to WHO cataract grading system. Serum calcium was determined by Arsenazo III method and serum magnesium by xylydyl blue method using Hitachi 902 autoanalyser.

**Results:** The study shows significantly decreased concentration of serum magnesium and increased concentration of calcium to magnesium ratio ( $p < 0.001$ ) in ARC when compared to control. Pearson's correlation analysis showed a significant negative correlation of serum magnesium with calcium was observed. Serum calcium to magnesium ratio was statistically identified as risk factors in senile cataract patients by using Multivariate logistic regression analysis (odds ratio, 5.2; 95% confidence interval, 0.483–2.805;  $p = 0.006$ ).

**Conclusion:** Decreased serum magnesium concentration and increased serum calcium to magnesium ratio were significantly associated with a high risk of cataract formation in patients with age-related cataract.

## Influence of drug metabolizing enzymes (CYP2D6, CYP3A5) and drug transporter (ABCB1) genetic variants on risperidone treatment response in patients with schizophrenia

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**Background:** Schizophrenia (SCZ) is a severe psychotic illness and antipsychotic drug risperidone is main stay in treatment of SCZ. Risperidone is primarily metabolized by cytochrome P 450 (CYP) family 2D6 enzyme and to a lesser extent by CYP3A5. However, available studies shows that genetic polymorphisms in CYP2D6, CYP3A5 and ABCB1 genes are associated with reduced activity of enzyme or transporter which may affect the risperidone response.

**Aims and Objectives:** Hence, in this study we explored an association of risperidone response with common genetic polymorphism in these genes.

**Materials and Methods:** A total of 320 patients with SCZ as per (DSM-IV TR) criteria for SCZ were recruited and treatment response was assessed after taking risperidone (4-8mg/day) for minimum of four weeks. Among them 238 patients were responders and 82 patients were non-responders to risperidone therapy. Genotyping of selected genetic variants CYP2D6\*10, CYP3A5\*3 and ABCB1 3435C>T, 2677G>A/T was done by using Real time-PCR (ABI 7300). Results: The variant allele frequencies for CYP2D6\*10, CYP3A5\*3, ABCB1 C3435T, and 2677G>A/T genetic polymorphisms were 16%, 52%, 57%, and 39% observed respectively. CYP2D6\*10 (CC=234, CT+TT=86, OR 1.17, 95% CI 0.67-2.0, p=0.56), CYP3A5\*3 (AA=53, AG=201, GG=66, p=0.15) ABCB1 C3435T (CC=60, CT=157, TT=103, p=0.58), and ABCB1 2677G>A/T (GG+GA+GT=193, AT+TT=107, OR 0.83, 95% CI 0.49-1.4, p=0.51) did not show any significant association with antipsychotic response to risperidone in patients with SCZ. Conclusion: CYP2D6\*10, CYP3A5\*3, ABCB1 C3435T, and 2677G>A/T genetic variants were not associated with treatment response to risperidone in patients with SCZ.

## Computational analysis of CRISPR Cas system among Staphylococcus genome

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**Background:** Staphylococcus is an opportunistic, highly adaptable and persistent human pathogen causing nosocomial infection in hospitals and community –associated infections worldwide. The CRISPR-Cas (Clustered Regular Interspaced Short Palindromic Repeats - CRISPR-associated proteins) is a prokaryotic immune system which can ward off the invasion of foreign genetic elements, such as phage or plasmids.

**Aims and objectives:** To analyze the distribution of CRISPR Cas system among staphylococci using bioinformatics tools.

**Materials and methods:** All the information about staphylococcal CRISPR Cas loci was obtained from National Center for Biotechnology Information (NCBI) database. Analysis of CRISPR loci, Cas genes, direct repeats and spacers were done using bioinformatic tools.

**Results:** In our study, we observed the presence of CRISPR subtypes III-A, II-C and coexistence of III A and/or II C among staphylococcal strains. Direct repeats and Cas1 gene was found to be conserved among the species and types, while the spacers were highly variable. Varied ranges of secondary RNA structure were found with respect to their stability.

**Conclusion:** The study shows that the proportion of CRISPR-Cas system in the genome of Staphylococcus is low. In silico analysis indicated that direct repeats are not conserved completely in different strains, and may differ from one to several nucleotides. The nature of repeat sequences may affect the activity of CRISPR system through formation of stable RNA secondary structures.

## Effect of aromatherapy by Citrus aurantium on pain and anxiety in first stage of labour among primi mothers

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**Background:** To manage the labour pain and anxiety various methods have been used. Aromatherapy is one of the non-pharmacological methods used to control pain and anxiety. Citrus aurantium oil is used in aromatherapy.

**Aims and objectives:** 1. To assess the level of pain and anxiety among primi mothers of experimental and control group. 2. To find the effect of citrus aurantium aroma on pain and anxiety among primi mothers of experimental group 3. To compare the pain and anxiety between experimental and control group after aromatherapy 4. To find an association between the baseline pain and anxiety with selected demographic variables. **Materials and methods:** A non-randomized control group design comprised of 64 primi mothers. Gauze impregnated with 4 mL citrus aurantium distillate was attached to the collar of subjects in experimental group for 30 minutes. Level of pain and anxiety were assessed before the administration as well as 30 minutes after administration of aromatherapy.

**Results:** There was a significant difference in pain and anxiety measurements before and after the administration of aromatherapy by citrus aurantium ( $p < 0.05$ ).

**Conclusion:** Findings revealed that the administration of aroma of citrus aurantium can reduce pain and anxiety.

## Effect of UGT2B7 Gene Polymorphism with Clinical Outcome in Pediatric Epileptic patients on Sodium Valproate Monotherapy

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**Background:** Pediatric epilepsy comprises of a chronic neurological disorders characterized by recurrent seizure attack. Sodium valproate is one of the common anti-epileptic drugs used in the treatment. Glucuronide conjugation is the major metabolic pathway of sodium valproate, carried out by the enzyme Uridine 5'-diphospho (UDP) glucuronosyl transferase (UGT) whose genetic polymorphisms may alter clinical outcome.

**Aim:** To find the association between UGT2B7 genetic polymorphism and clinical outcome in terms of efficacy and tolerability in pediatric epileptic patients on sodium valproate monotherapy.

**Methods and Materials:** In this cohort study, 75 pediatric epileptic patients aged 2-18 years receiving sodium valproate monotherapy for past one month were included after obtaining informed consent. Genetic polymorphism patterns of UGT2B7 (C161T, A268G, G211T) was evaluated by PCR-RFLP. Clinical outcome was measured in terms of responders and non-responders based on seizure control during the 6 month observation period. Tolerability was measured by estimating the hepatic, renal and other lab parameters. Clinical outcome in different UGT genotypes was compared by Chi square test. P value <0.05 was considered as significant.

**Results:** Out of 75 patients, CC (41.3%), CT (38.7%), TT (20%) pattern was observed in UGT2B7 (C161T) gene, AA(14.7%), AG(42.7%), GG(42.7%) in (A268G) gene and GG(80%), GT(18.7%), TT(1.3%) in (G211T) gene. It was found that there was no statistical difference in clinical outcome with different UGT2B7 genetic polymorphism patterns.

**Conclusion:** Different pattern of UGT2B7 genetic polymorphism doesn't have any association on the clinical outcome of Sodium valproate in terms of efficacy and tolerability of epilepsy. We also conclude that sodium valproate was well tolerated among the pediatric patients with epilepsy and can be used an effective anti-epileptic drug.

## Virtual Screening of *Pseudomonas aeruginosa* Virulent Cascade through Phytobiologics

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**Background:** *Pseudomonas aeruginosa* (PA), a Gram-negative opportunistic pathogen, leading to fatal infections in humans and animals. The regulatory factor (T3SS) regulates the virulent genes and associated proteins of PA and can induce pathogenesis in both planktonic and biofilm forms. The pathogen has gained resistance to the currently used antibiotics so it is of high priority to identify and improve alternative natural compounds as potent anti-pseudomonas drugs. 100 small molecule phytobioactives having anti-pseudomonas property were obtained from the literature survey and were considered as lead ligands for the study with structures retrieved from PubChem. The ligands were virtually screened with target proteins involved in growth, survival, biofilms, and virulence using iGemdock tool. Top five compounds were screened and detailed binding interaction was studied using a molecular docking tool (AutoDock). The compounds were further screened for “absorption, distribution, metabolism, excretion, and toxicity” (ADMET) studies to predict the molecular properties and the drug-likeness of the phytocompounds. Further, In-depth studies have to be performed to understand the escape strategies at a molecular level like secretion systems, oxidative cascades, advanced metabolic networking, alternative regulatory master transcriptional factors that can facilitate an better with a holistic approach to decipher the pathogen survival within and outside the host cell leading to newer drug design and development.

## Anti Cancer, Anti Oxidant and Anti Microbial Effects of n-Hexane extracts of *Cayratia trifolia*

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**Background:** Medicinal plants possess numerous secondary metabolites including alkaloids, flavonoids, terpenoids and other phenolic compounds. They are used to treat diseases and disorders in humans. The frequent use of synthetic drug leads to cause of side effects and occasionally cause multidrug resistance. Unlike synthetic drug, natural products especially phytochemicals are promising factors for control and prevention of diseases without side effects. Therefore, search of novel natural products and its derivatives from the medicinal plants are subjected to resolve this issue.

**Aims and objectives:** This study was designed to analyze the antioxidant, antimicrobial and anticancer activity of n-hexane extract from *Cayratia trifolia* L. (*C.trifolia*). It is an Indian medicinal plant, and it belongs to the family Vitaceae.

**Materials and methods:** Antioxidant effect was determined by free radical scavenging assays. Antimicrobial activity was analyzed by disc diffusion method on six pathogenic microorganisms. Besides, anticancer potential of plant extract was evaluated by MTT assay on A2780 cell lines.

**Results:** Results exposed that, the n-hexane extract of *C.trifolia* possess significant antioxidant activity with comparable good IC<sub>50</sub> values on radical scavenging assays. Antimicrobial activity of extract exhibited maximum zone of inhibition ranged on tested microorganisms. The anticancer activity of plant extract shown strong inhibitory activities on cell growth with minimal IC<sub>50</sub> value on A2780 cell lines.

**Conclusion:** This study can be concluded that, the n-hexane extract from *C.trifolia* as a promising source of phytochemicals which may serve as possible antioxidant, antimicrobial and anticancer agent.

## Comparative study of eight week pilates and plyometric training program on dynamic balance and core strength of male karate players

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**Background:** In the past decades there has been an increase in the participation in Karate and now it is practiced and played across the worldwide. The success of the karate player mainly depends on the balance and core strength. Improvement in these two physical variables depends upon the type of exercise training used by the athletes. In the Indian context there is a dearth of literature supporting use of Pilates and Plyometric training programme in Karate players. Therefore, to achieve success in the sport best training method should be chosen by athletes or coaches.

**Purpose:** To compare the effectiveness of two training programs Pilates and Plyometric on balance and core strength of aspiring National level male Karate players.

**Materials and Methods:** The design of this study was experimental and sampling technique was simple random sampling. This study is conducted on a sample size of 40 in each group Experimental group A (Plyometrics, N=40), Experimental group B (Pilates, N=40) and Control group C (N= 40). The national level male karate players (age 18 to 24 Years) with playing experience of 5 years were included. Exclusion criteria were recreational players, recent injury in past 6 months, any musculoskeletal and neurological problem, player addicted to any drug or alcohol. The plyometric and pilates training were carried out in experimental groups for three days per week for 8 weeks and no training method implemented in the control group. Three reading were recorded, at the baseline, at the 4<sup>th</sup> week and at the 8<sup>th</sup> week. Dynamic balance and core strength were the outcome measurements. All analysis was done using the SPSS version 2.0. Descriptive statistics were reported as mean, Standard Deviation (SD). ANOVA and multiple regressions were calculated. Significance was set at  $p < 0.05$ .

**Results:** When the pre and post intervention values of the experimental groups have been compared at the 4<sup>th</sup> week and 8<sup>th</sup> week of the study, the significant improvement ( $p < 0.05$ ) was found in the dynamic balance (mSEBT- Modified star excursion balance test) and core strength of the plyometric group (group A).

**Conclusion:** It can be stated according to the findings of the present study that plyometrics and pilates both can improve these two physical variables of players but the plyometric training had more positive and better effects on balance and core strength of the karate players than pilates group in the view of sports performance.

## Effectiveness of Telemedicine Counselling On Covid 19 Related Anxiety among Home Isolated Covid19 Positive Clients at Madurai

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**Background:** During the Covid-19 Pandemic, Telemedicine is a best method of providing outpatient care in many regions with shelter-in-place and social distancing policies. Our aims are to describe the features of telemedicine programs in primary care during the Covid-19 pandemic. Through telemedicine we can easily approach the Covid positive clients through video call at their door steps and give counselling and health education regarding Covid precautions, treatment and prevention.

**Aims and Objectives:** 1. To find out the Pretest level of Covid 19 related anxiety among home isolated Covid19 Positive clients at Madurai 2. To evaluate the effectiveness of telemedicine Counselling on Covid 19 related anxiety among home isolated Covid19 Positive clients at Madurai 3. To find the association between the Covid19 related anxiety with selected demographical variables Materials and methods Pre experimental research, one group pretest post-test design was adopted for conducting this study at Madurai Corporation. A sample of 30 Covid positive home isolated clients was selected for the study. Convenient sampling technique was used by who satisfied the inclusion criteria were selected for this study. Selection and Development of Study Instrument The instruments used in the study were demographic variable proforma and Hamilton Anxiety Rating Scale, Demographic variables proforma consisted of age, gender, religion, educational status, occupation, family income, and food habit.

**Data Collection:** The data collection was done for a period of 2 weeks till come isolation period completed. Rapport was established with clients after a brief introduction about the study and its purpose. The consent was obtained from the client after fully explaining the procedure of the study. Based on the criteria for sample selection, the Covid positive home isolated clients for the study were selected using convenient sampling. Pre test assessment was done to evaluate the level of anxiety among the Covid positive clients. Clients are connected with Video by One Glance software and counselling given nature of the disease, precautions, treatment plan, recovery rate and diet plan. Post test assessment was done by Hamilton Anxiety Rating Scale. The investigator followed all ethical principles for collecting the data.

**Results and Discussion:** The findings revealed that among the total number of 30 subjects. Pretest level of anxiety 3 (10 %) were Nil and 2 (6 %) were Mild and 17 (57%) were moderate and 8 (27%) were having severe anxiety. Post test level of anxiety 18 (60 %) were Nil and 7 (23 %) were Mild and 5 (17%) were moderate and No clients were having severe anxiety. Pre test Covid 19 related anxiety score mean was 19.1 and standard deviations was 1.78. Post test Covid 19 related anxiety score mean was 5.5 and standard deviation were 1.05 and Mean difference is 13.6. There is no association between the Covid19 related anxiety with selected demographical variables. (P value 0.05).

**Conclusion:** Video assisted Telemedicine counselling regarding Covid care and preventive activities had a statistically significant in reducing anxiety among home isolated Covid positive clients. It is non invasive and distance approach procedure hence it has no disadvantages for the clients and also protects the health care staffs from infection

## Comparison of laboratory parameters in type 1 and type 2 diabetes mellitus developing diabetic ketoacidosis

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**Background and Objectives:** To compare the Laboratory Parameters in Diabetic Ketoacidosis (DKA) patients with Type 1 and Type 2 Diabetes Mellitus (DM).

**Methods:** 50 patients with DKA were studied, 25 each in Type 1 and Type 2 DM. Diagnosis of DKA was made based on the following Laboratory parameters – Glucose levels >250 mg/dL, Blood pH <7.3, Serum Bicarbonate <15 mEq/L and Urine Ketone Bodies (UKB).

**Result:** The biochemical parameters – Random Blood Sugar (RBS), pH and Bicarbonate before and after treatment in Type 1 DM with DKA were  $645 \pm 141$  vs  $132 \pm 15$  mg/dL,  $7.05 \pm 0.13$  vs  $7.33 \pm 0.02$ ,  $8.2 \pm 4.6$  vs  $27.3 \pm 2.5$  mEq/L respectively. In Type 2 DM - RBS, pH and Bicarbonate before and after treatment were –  $590 \pm 154$  vs  $179 \pm 82$  mg/dL,  $7.12 \pm 0.1$  vs  $7.28 \pm 0.11$  and  $10.4 \pm 4.32$  vs  $24.1 \pm 5.1$  mEq/L respectively. UKB measured as “Plenty” was higher in Type 1 DM. There was one mortality in Type 2 DM.

**Conclusion:** There is no significant difference in biochemical profile of patients with Type 1 and Type 2 DM developing DKA, except UKB which was higher in Type 1 DM.

## Etiological Analysis of Urinary Tract Infections and Antibiotic Susceptibility Patterns among Diabetic and Non-Diabetic Patients

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**Objectives:** The main aim of the present study is to investigate the differences in etiology, clinical, laboratory parameters and antibiotic susceptibility and resistance among diabetic patients in comparison to non-diabetic patients.

**Materials and Methods:** A total of 100 urine samples were taken out of which 50 were from diabetic and 50 from non-diabetic patients. Clinical, microbiological, and laboratory parameters were compared among both the groups. Samples were tested for antibiotic sensitivity parameters using disk diffusion method.

**Results:** Fever was the most common symptom and majority of the non-diabetic group was symptomatic in comparison to the diabetic patients. Renal parameters were altered in a larger fraction of diabetics in comparison to the non-diabetic group. Percentage of recurrent UTI was higher in diabetics (24%) compared to non-diabetics (18%). Most common organism isolated was E.coli, followed by klebsiella enterococcus, pseudomonas and staphylococcus aureus. However the incidence of pseudomonas was higher among non-diabetics probably due to catheter insertion. Percentage susceptibilities for various antibiotics among diabetics and non-diabetics are as follows: ciprofloxacin - 81% vs 78%, cotrimoxazole - 68% vs 73%, ampicillin - 50% vs 52%, nitrofurantoin - 88% vs 86%, cefoperazone and sulbactam - 95% vs 92%, piptaz - 92% vs 93%, Norfloxacin - 60% vs 58%, cefuroxime - 57% vs 55%, cephalixin - 20% vs 15% and cefotaxime - 58% vs 55%. The common complications observed among the diabetic patients were recurrent UTI, emphysematous pyelonephritis and sepsis.

**Conclusion:** The most common organism isolated was E.coli with higher recurrence in diabetics. The maximum susceptibility among diabetics was for cefoperazone and sulbactam and for non- diabetics was piperacillin tazobactam. The maximum resistance for both the groups is for cephalixin followed by ampicillin.

## Phytochemical, GCMS Analysis and Antioxidant Profile of Ethanol Extract of *Simarouba glauca* Seeds

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**Background:** Medicinal plants acted as traditional medicine from the ancient time and recognized as scientific medicine in modern days. *Simarouba glauca* is Indian traditional medicinal plant commonly called as "Paradise Tree or Lakshmi Taru" in worldwide due to its medicinal various properties.

**Aims and Objectives:** The aim of the current study is to explore the seeds of *Simarouba glauca* to know the phytochemicals, GCMS analysis and antioxidant profile of ethanol extract. **Materials and Methods:** To study the ethanol extract of *S. glauca* seeds qualitative and quantitative phytochemical analysis by using Harnborne method, to know the fatty acid mixture analysed GCMS and assessed antioxidant profile using standard methods.

**Results:** In qualitative method of phytochemicals found positive for flavonoids and carbohydrates and in quantitative method of phytochemicals found total flavonoid content highest at 80µg concentration of extract exhibited 0.366mg/ml, total proanthocyanidin content highest at 40µg concentration of extract exhibited 0.134mg/ml and in total phenol content highest at a 100µg concentration extract of exhibited 0.961mg/ml. In Antioxidant profile, ethanol extract of exhibited maximum 2, 2-Diphenyl-1-picrylhydrazyl (DPPH) scavenging property in (70%) at 100 µg/mL concentration with an IC<sub>50</sub> value 50.93µg/mL. Decolourization potential of 2,2'-azino-bis (3-ethyl benzthiazoline-6-sulfonic acid (ABTS) exhibited 203.87µg/mL and (65%) property. Ferric Reducing Antioxidant Potential (FRAP) assay exhibited Ascorbic Acid equivalents (AAE/ml) shown in different concentration. In GCMS analysis to determine the relative contents of the fatty acids were calculated with area normalization. Ten fatty acids amounting to 100% in *S. glauca* seeds of the total contents detected and found fatty acids in 9-Octadecenoic acid, (E)- (43.27%), Octadecanoic acid (24.51%), n-Hexadecanoic acid (16.77%) and other compounds shown less than (4%).

**Conclusion:** All the mixtures exhibited as fatty acids, found abundant in seeds and it had a vast range of potential application and a prospect of development in nutraceutical, as well as medicinal for healthcare.

## Multiple Swellings Around the Neck - A Rare Cause

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**Background:** Rosai Dorfman Disease (RDD) is a rare entity that causes proliferation of a specific type of cell - the histiocytes, which later accumulate in certain areas. Here, we present a rare case of RDD which not only presented with multiple lymphadenopathy but also with glandular enlargement.

**Case Description:** 60 year old male presented with multiple painless swellings on either side of his neck also involving his parotid, sub-mandibular and thyroid glands, insidious in onset, gradually increase in size and number over past 2 to 3 years. PET-CT showed generalised lymphadenopathy with no organ involvement. Excision biopsy of cervical lymph node with Histopathological examination of biopsy specimen showed sinus histiocytosis, evidence of emperipolesis and S-100 staining was positive which confirmed the diagnosis of Rosai Dorfman disease. The patient was reassured and sent home on steroids to prevent/decrease flares.

**Discussion:** RDD is an innocuous condition which simply causes lymphadenopathy and presents with recurring swellings. It's easily confused with certain infections or malignancy. No specific treatment exists. Literature has described several options such as Interferon therapy, steroids or surgery. For some cases, mere follow up and observation is sufficient without any treatment.

**Conclusion:** The clinical presentation of this condition varies from one patient to another. Hence it is important in a case of multiple swellings to evaluate further to rule out any ominous causes. The treatment is to be tailored to the patient depending on the seriousness or the affliction of the patient.

## Serum Uric Acid: An Important Predictor of Incident T2DM

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**Background:** Uric acid was initially believed to be just a metabolically inert end product of purine metabolism. Recent studies however have shown a positive association between serum uric acid levels & the development of T2DM.

**Objectives:** To investigate serum uric acid levels in patients with Impaired glucose tolerance, known T2DM in comparison with normal subjects.

**Method:** Case control study was conducted on 50 normal subjects and 50 patients with impaired glucose tolerance and or diabetes in our institution.

**Results:** Mean age- $51.13 \pm 10.02$  years. Of the patients studied, there were 7 with Impaired glucose tolerance and 43 with known T2DM. Mean blood sugars: T2DM – FBS:  $121.74 \pm 7.92$ , PPBS:  $210.69 \pm 23.24$ , Impaired Glucose tolerance- FBS:  $115 \pm 2$ , PPBS:  $152.85 \pm 9.23$ , Controls – FBS:  $79.12 \pm 5.508$ , PPBS:  $122.4 \pm 5.102$ . Serum Uric Acid Levels : T2DM –  $3.54 \pm 0.51$ , Impaired glucose tolerance –  $6.37 \pm 0.52$ , Controls –  $4.39 \pm 0.76$

**Conclusion:** Serum Uric acid levels were significantly higher in patients with impaired glucose tolerance when compared to the control group. Lower Urate levels were found in known diabetics when compared to the control group. Uric acid is a pro oxidant known to produce oxidative stress and increase TNF levels, both related to the development of diabetes. Hence elevated Uric acid in patients with Impaired glucose tolerance can serve as a predictor for impending diabetes

## A Study of Fungal Isolates from Superficial Mycoses Cases

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**Background:** Superficial mycoses refer to the disease of the skin and its appendages caused by the fungi. This group includes dermatophytosis, pityriasis versicolor, tinea nigra, white piedra, black piedra and candidiasis. These fungi have the capability to produce keratinase, which allow them to metabolize and live on human keratin like skin, hair and nail.

**Aims and objectives:** This study was an attempt to estimate the prevalence of fungal isolates in superficial mycoses cases.

**Materials and methods:** A prospective study over a period of six (6) months from January 2015 to June 2015 was conducted at Integral Institute of Medical Sciences & Research, Lucknow, Uttar Pradesh. The study population comprised of 118 clinically suspected cases of superficial mycoses attending Dermatology outpatients department at Integral Institute of Medical Sciences And Research, Lucknow.

**Results:** A total of 118 patients were enrolled in the study, comprising 82 males (69%) and 36 females (31%). None of them had any systemic diseases. Tinea corporis 38 (32.2%) was the most common clinical type seen (table 1) and the male to female ratio in relation to clinical types was found to be 2.2:1 which was significant ( $p=0.00$ ) (table 2). And the predominant age group affected was 21-30 years 41 (34.7%) and say that males were affected more than female. 81(68.6%) of patients were literate, 74 (62.7%) cases belonged to low socio-economic status and 60% of cases were from rural area.

**Conclusion:** Our study has given us insights into the clinic-mycological aspects of superficial mycoses in our region. The study reveals that skin infections are more common than the hair and nail infections in dermatophytoses cases. Common clinical types are T.corporis, T. pedis, T. cruris.

## Comparison Of Cytomorphology And Frozen Section Of Endometrial Aspiration With Histopathology Of Endometrial Curettage In Abnormal Uterine Bleeding

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**Background:** The standard method of endometrial assessment is by histopathology (HP) of endometrial curettage, which is an invasive and time consuming procedure. Recently Endometrial Aspiration (EA) is used as safe outpatient procedure in diagnosis of endometrial lesions of all ages.

**Aims & Objectives:** To compare the EA cytology with frozen section and HP findings among women more than 40 years of age with AUB.

**Material and Methods:** Women diagnosed with AUB during the period of 6 months were subjected to EA using Karman's cannula. Aspirates was stained with Papanicolou and May Grunwald Giemsa stains. Remaining material was subjected to frozen section. Hematoxylin& Eosin stained sections of endometrial biopsy/curettage taken following EA were compared with cytological and frozen section findings.

**Results:** A total number of 25 cases were analyzed. Cytology of the EA could identify 17 benign entities, 4 inflammatory, 2 shedding endometrium(SE), 1 atypia and 1 carcinoma. There was 96% correlation of cytology with routine HP, where 1 SE was diagnosed as benign. Both simple hyperplasia without atypia and secretory phase were termed as benign. One case of endometritis also had *Trichomonas vaginalis* which was only found in cytology. Frozen section showed 88% correlation.

**Conclusion:** EA cytology can effectively differentiate benign, inflammatory and malignant lesions. However simple hyperplasia and phases of endometrium could not be differentiated. Whenever the material was scanty, frozen section was inconclusive. EA can be useful, less invasive and does not require anesthesia. Still histopathologic examination of biopsy is the gold standard for diagnosis.

## A case of Tuberculosis in Rheumatoid arthritis patient following therapy with biologic DMARD

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**Background:** Biologic DMARDs like TNF blockers have revolutionized the treatment of Rheumatoid arthritis. These drugs are highly effective but also need stringent screening before initiation to minimize the risk of adverse effects.

**Case Description:** This case report documents a 54 year female patient with Rheumatoid arthritis with high disease activity, with minimal response to conventional DMARDs. She was started on injection Adalimumab 40 mg fortnightly by a doctor elsewhere. After receiving six doses of adalimumab she presented to Rheumatology department with fever, breathlessness and abdominal discomfort. After preliminary evaluation patient was found to have bilateral pleural effusion, multiple splenic abscesses. Mantoux test was negative and IGRA was strongly positive. Pleural fluid ADA levels were elevated, and AFB was positive. Patient was started on anti-tuberculosis therapy and discharged after her symptoms improved. Patient presented again 10 days after discharge with severe back pain. MRI spine showed thin prevertebral collection. A diagnosis of disseminated tuberculosis after receiving a short course of adalimumab was made.

**Discussion:** Before initiation of adalimumab, LTBI screening was not done in this patient. Chest x ray was done which was unremarkable. There is wide variability in clinical practice among doctors in optimisation of screening strategies before initiation of biologics. This patient is on immunosuppression for more than 6 years. Before initiation of strong immunosuppressives like Anti TNF, LTBI testing is mandatory which was missed in this patient. If she was screened and found to be LTBI positive, LTBI prophylaxis could have averted a serious problem like disseminated tuberculosis.

**Conclusion:** ST, IGRA and chest x ray should be done as a part of LTBI screening for all patients being planned for anti TNF therapy

## Unraveling the lncRNA/miRNA/PTPN3 axis in breast cancer

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**Background:** In Breast cancer pathogenesis - the most common cancer in women, the regulatory role of long non-coding RNA (lncRNA)-miRNA-PTPN3/PTPH1 (Protein Tyrosine Phosphatase H1/Protein Tyrosine Phosphatase Nonreceptor Type 3) axis is less elucidated. Our previous studies have demonstrated that breast tumors express PTPN3 and correlated with ER, PR, and HER2 statuses.

**Aims and objectives:** Explore the lncRNA/miRNA/PTPN3 axis in breast cancer by bioinformatic profiling of miRNAs targeting genes (UPAR, PTPN3, HER2), lncRNAs and relative expression analysis of profiles in breast cancer using cell lines, tumor samples, and RNA-seq dataset.

**Materials and methods:** We evaluated the PTPN3 expression along with other proteins HER2 and uPAR through lncRNA-miRNA regulatory pathways, as well as cataloged the common miRNAs/lncRNAs regulating and or interacting with PTPN3, HER2, and uPAR by bioinformatics analysis. We evaluated the expression of lncRNAs (NEAT1, MALAT1, DSCAM-AS1, and HOTAIR), miRNAs (hsa-miR-93-5p, hsa-miR-17-5p, hsa-miR-497-5p, hsa-miR-106-5p, and hsa-miR-20-5p) and genes (PTPN3, HER2, and uPAR) in MDA-MB468, MDA-MB231 and MCF7 breast cancer cells and breast tumor samples (n=5) by real-time PCR. Results: Except for MALAT1, other examined lncRNAs were significantly high in ER-positive MCF7 cells suggesting their transcriptional regulation by ER-dependent pathways. Among the examined miRNAs, hsa-miR-93-5p, hsa-miR-17-5p, and hsa-miR 20-5p were less expressed in MCF7 cells compared to 231 and 468 cells.

**Conclusion:** An inverse correlation of few miRNAs has been observed in comparison with the expression profile of PTPN3, and our preliminary studies in human breast tumors provide a starting point for further studies to explore the regulatory roles of lncRNA-miRNA-PTPN3 axis.

## 28-Homobrassinolide inhibits inflammation in LPS-induced RAW264.7 cells via the suppression of p38 MAPK/NF- $\kappa$ B signaling

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**Background:** 28-Homobrassinolide (28-HB) is a phytosteroid which functions primarily as a growth hormone in plants. Effects of this oxysterol in animal systems have only begun to emerge.

**Aims and objectives:** We investigated the effect of 28-HB in LPS-induced inflammatory response in vitro. Murine macrophage cell line RAW264.7 was chosen as the study model.

**Materials and methods:** LPS (0.1  $\mu$ g/mL) stimulated cells were treated with different concentrations of 28-HB (1- 40  $\mu$ M). Intracellular ROS and secreted nitric oxide levels were quantified by nitroblue tetrazolium and Greiss reagent, respectively. Wound healing ability was investigated by scratch assay. Expressions of iNOS and ABCA1 were analyzed by Western blotting. MMP-9 secretion was investigated through gelatin zymography. Subsequently, intracellular levels of NF- $\kappa$ B, p-NF- $\kappa$ B, p-STAT3, p-MAPK/JNK, and p-p38 MAPK were estimated by ELISA.

**Results:** 28-HB decreased LPS-induced production of ROS and nitric oxide dose-dependently in 12 hours. Accelerated in vitro wound healing was observed in 48 hours at 20  $\mu$ M. While iNOS protein expression and MMP-9 secretion decreased, ABCA1 expression increased. Levels of phosphorylated forms of NF- $\kappa$ B, p38 MAPK, p-MAPK/JNK, and p-STAT-3 decreased in a dose-dependent manner without any significant change in basal NF- $\kappa$ B levels.

**Conclusion:** The inhibition of MMP-9 and iNOS by 28-HB can be attributed to the downregulation of NF- $\kappa$ B activation via suppression of p38 MAPK phosphorylation. Additionally, 28-HB binding to the liver X receptor can activate ABCA1 causing subsequent disruption of LPS signal transduction from TLR4. Based on these findings, we suggest that 28-HB shows potential as a natural anti-inflammatory agent.

## Effect of cleistanthin B on chemotherapy and radiotherapy resistant colon cancer cells

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**Background:** The acidic microenvironment around the tumor cells is identified as one of the important factors in development of treatment resistance and metastasis. This could be due overexpression of vacuolar ATPase pump in tumor cells. Therefore, counteracting the acidic tumor environment by targeting V-ATPase pump may reverse the chemo-resistance and sensitize the colon cells to radiotherapy. Natural compounds shown to be potent agents with diverse anticancer mechanisms. Herein, the anticancer activity of cleistanthin B was examined against chemotherapy and radiotherapy resistant colon cancer cells.

**Aims and objectives:** To evaluate the anticancer potential of cleistanthin B on chemotherapy and radiotherapy resistant colon cancer cells.

**Materials and methods:** The cytotoxic activity of cleistanthin B against 5-fluorouracil and oxaliplatin and ionizing radiation resistant cells by MTT assay. Apoptotic cell death was analyzed by acridine orange and ethidium bromide dual staining and annexin-PI staining. Resistant cells (HT29-R) were developed by repeatedly exposing parental HT29 cells to 5-fluorouracil and oxaliplatin, and ionizing radiation. Expression patterns of V-ATPase complex isoforms in control and cleistanthin B treated HT29 resistant cells were studied using qRT-PCR and Western blot assay.

**Results:** The results showed that cleistanthin B induced cell death in parental as well as in resistant colon cancer cells. The anticancer activity of cleistanthin B was due to induction of apoptosis. Expression of V-ATPase isoforms were increased in HT29 colon cancer cells after repeated exposure to 5-fluorouracil and oxaliplatin, and ionizing radiation. Cleistanthin B showed downregulation of V-ATPase isoforms especially V-ATPase B subunit thereby, inducing cancer cell death.

**Conclusion:** Cleistanthin B induced cell death in resistant colon cancer cells and it is worth studying its usefulness in tumors expressing high V-ATPase activity.

## Superovulation and exogenous estradiol and leptin mediated regulation of Gemin5, Xrn1, Cpeb and Stau1 in reproductive tissues of rodents

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**Background:** Messenger RNAs (mRNAs) form complexes with RNA binding proteins (RBPs) that in turn regulate translation of these bound mRNAs. RBPs are known for their crucial role in mammalian fertility and are conserved across many species. The Stau1, Gemin 5, Xrn1, and Cpeb represent a group of proteins with different functions in early embryogenesis post-transcriptional regulation.

**Aims and objectives:** To examine gonadotropins, estradiol and leptin mediated regulation of Gemin5, Cpeb, Xrn1, and Stau1 expression in the reproductive tissues of superovulation and ovariectomized mouse models of menopause.

**Materials and Methods:** Immature rats were injected with pregnant mare serum gonadotropin (PMSG) followed by hCG to induce superovulation. We also examined the effect of estradiol and leptin treatments alone or in combination in the uterine tissues of ovariectomized mice. Semi-quantitative RT-PCR analysis was carried out to examine the expression of Gemin5, Cpeb, Xrn1, and Stau1 in reproductive tissues of rodents.

**Results:** Rat Ovarian Stau1 expression peaked at 12h post hCG treatment and it decreased significantly at 24h post hCG when compared to 12h, whereas the Gemin5 expression was sustained at relatively high levels at both 12h and 24h post hCG treatment. In rat uterine tissues, induced expression of Stau1 was seen at 12h and 24h post hCG treatment and Gemin5 expression was significantly increased at 24h post hCG treatment. Combined treatment of estradiol and leptin significantly increased CPEB expression at 4h and Gemin5 and Xrn1 expression at 40h in uterine tissues of ovariectomized mice suggesting them as targets of estradiol and leptin cross-talk.

**Conclusion:** These preliminary observations of altered expression of Gemin5, Cpeb, Xrn1, and Stau1 due to gonadotropins and steroid hormone, displayed in two different experimental models highlight their importance as therapeutic targets for anovulation or in overcoming obesity induced endometrial homeostasis disturbances during pregnancy.

## A retrospective study on the adverse drug reactions associated with hematinics at tertiary care teaching hospital

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**Background:** Adverse reactions are the documented hazards of drug therapy and they can arise with any class of drugs and many studies have revealed that the incidence is increasing with blood and blood products.

**Aims and Objectives:** To identify and analyze Adverse Drug Reactions of Hematinics in inpatients of a tertiary care hospital.

**Materials and Methods:** A retrospective study carried out for a period of six months from September-2019 to February-2020 using Suspected Adverse Drug Reaction Forms at SRMC-AMC. All the ADR reported were analyzed using WHO Causality Assessment Scale.

**Results:** A total of 29 ADRs were reported during the study period with female predominance (79.31%). More number of ADRs were from Obstetrics & Gynecology and General Medicine in which the most affected organ systems were the skin (86.20%) and the GIT (13.79%). The hematinics mostly accounted were Iron sucrose (44.82%) followed by ferric carboxy maltose (37.93%) and Iron dextran (17.24%) in which type B reactions were more compared to type A and 72.41% of them were unpredictable. The severity assessment revealed that most of them were moderate (62.06%) followed by mild and severe reactions. Of the reported reactions 58.62% were definitely preventable and causality assessment was done which showed that 68.96% of the reactions were probable, possible (20.68%) and conditional (10.34%). Most of the patients (65.51%) were treated with Antihistamines & Corticosteroids, only Anti-histamines (24.13%) and no treatment (10.34%).

**Conclusion:** Adverse Drug Reactions to Hematinics are increasing and some of them resulted in increased healthcare cost due to the need of some interventions and increased length of hospital stay. The health care system should promote the spontaneous reporting of Adverse Drug Reactions of Hematinics, proper documentation and periodic reporting to pharmacovigilance centers to ensure drug safety.

## Comparison between point of care glycated hemoglobin A1C and high performance liquid chromatography glycated hemoglobin A1C

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**Background:** The standard method to measure HbA1C is ion exchange high performance liquid chromatography (HPLC). Boronate affinity chromatography offers us an opportunity to measure HbA1C in an easy to perform, quick and precise way. By comparing the Point of care (POC) HbA1C values with the gold standard ion exchange HPLC HbA1C values we can elucidate the usefulness of POC HbA1C as an acceptable alternative.

**Aim:** To study the agreement between point of care HbA1C and ion exchange High Performance Liquid Chromatography HbA1C.

**Methods:** It is an observational study for a period of 18 months done at Sri Ramachandra Medical Centre. 100 patients over 18 years of age without any history of debilitating illness or anemia were included in the study. Pertinent history was taken and HbA1C was measured both by HPLC and POC using capillary blood for boronate affinity chromatography.

**Results:** A linear correlation was observed between the two methods used to assess HbA1C. A positive correlation of 0.989, a P value of < 0.0001 and a confidence interval of 0.9841 to 0.9926 was seen.

**Conclusion:** Point of care HbA1C using boronate affinity chromatography is a method with acceptable accuracy and can be used as a screening tool.

## Correlation of cardiac valve integrity and disease activity in vitiligo

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**Background:** Vitiligo results from progressive loss of melanocytes. Various studies have shown that vitiligo can cause systemic effects. In mice, melanocytes were found in atrioventricular (AV) valvular structures.

**Aims and Objectives:** To determine whether there is any structural abnormalities and functional regurgitation of the AV valves, To evaluate the disease activity in vitiligo patients and To correlate the cardiac findings with disease activity.

**Materials and methods:** The study protocol was examined and approved by Institutional Ethical Committee. It was a cross sectional study, consisting of 25 patients previously diagnosed with vitiligo were taken as the study group, after getting informed written consent.

**Echocardiogram:** Two-dimensional echocardiography was used to analyse the mitral and tricuspid valve structure and function.

**Measurement of Disease Activity:** Vitiligo Area Severity Index (VASI) = All Body Sites [Hand Units] × Residual Depigmentation. Vitiligo Disease Activity Score (VIDA): Disease activity was graded as +4 to -1 based on recent disease activity. The data was collected, tabulated and statistically analysed by using SPSS 20. 'p' value < 0.05 was considered significant.

**Results:** Six patients (24%) had MVP AML (Mitral Valve Prolapse Anterior Mitral Leaflet) and trivial mitral regurgitation. Five patients (20%) had tricuspid regurgitation. Structural abnormalities of the AV valves were found among patients with active disease within the past six months.

**Conclusion:** It was found from the study that there was an increased incidence of mitral valve prolapse and mitral regurgitation.