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VINAYAKA MISSION'S RESEARCH FOUNDATION
(Deemed to be University under section 3 of the UGC Act 1956)

AVMC
AARUPADAI VEEDU MEDICAL COLLEGE

BMSeCON -2024

5th INTERNATIONAL e-CONFERENCE

"Unveiling the Future of Basic Medical Sciences: A Global Perspective"

Organised by
Departments of Anatomy, Physiology & Biochemistry

FINAL ANNOUNCEMENT

Highlights

- Scientific talks from International/National Speakers
- Publication of Conference Proceedings
- Oral presentations for Faculty/ PhD Scholars/ PG students
- e-Poster presentations for UG students
- Young Research Scholar Award
- TNMC Credit Hours

04th - 06th December 2024

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Dear all,

Greetings from Departments of Anatomy, Physiology, Biochemistry

It is our pleasure to invite you for the 5th International e-conference on **"Unveiling the Future of Basic Medical Sciences: A Global Perspective"** that will be conducted from 04th-06th December 2024.

About Vinayaka Mission's Research Foundation (VMRF)

VMRF is a pioneering and vibrant Research Foundation (Deemed to be university) accredited with **'A' Grade** by NAAC offers multi disciplinary courses in a multi-cultural environment with an ambience marked by harmony in diversity. The VMRF is committed to offer education in the most professional manner and ensures enormous growth potential to the students. VMRF boasts of the most diversified education in terms of number of faculties ranging from Medicine, Allied Health sciences, Engineering and Technology to Management - almost an entire gamut of academic disciplines. VMRF's main campus in Salem, Tamil Nadu is truly a scenic marvel surrounded by mountains and is a hallmark in the city.

About College (AVMCH)

The Aarupadai Veedu Medical College and Hospital was established at Puducherry in the year 1999, with due approval from the Government of India and Medical Council of India. The Institution offers NMC recognized MD/MS programs in several disciplines in addition to MBBS program. AVMC campus is home for a variety of flora and fauna. The eco-friendly, plastic and tobacco free campus is Wi-Fi enabled and houses Nursing, Physiotherapy and Allied Health Science colleges. Unique and distinguished program is also offered by BASLP. Presently 800 students are studying in the College. From 2020, 150 students are being admitted in the MBBS program.

About Phase I MBBS Departments

All the 3 Phase I MBBS departments of AVMC were established in the year 1999. Major activities of the departments are teaching and research. Department of Anatomy has established a Plastination lab and organized several hands on workshops in Plastination techniques. Department of Biochemistry is known for adopting newer T-L methods. Department of Physiology has a Centre of excellence in Clinical Physiology and offers value added courses in nerve conduction, ECG and Pulmonary function testing.

About BMSCON

We, the preclinical departments (Anatomy, Physiology and Biochemistry) from Aarupadai Veedu Medical College and Hospital, a constituent college of Vinayaka Mission's Research Foundation (VMRF) started the trend of conducting one international conference every year from the year 2020.

Our 1st International Conference conducted in 2020 emphasised on the emerging trends in Research in the field of Basic Medical sciences. This was among the very few academic events that took place in 2020 when all educational activities came to a grinding halt due to Covid restrictions. The 2nd international conference (2021) focused mainly on exploring newer modalities in teaching - learning and Research in Basic Medical Sciences during COVID era. The 3rd International Conference was conducted in 2022 on the theme "Role of Basic Medical Sciences in Academia, Diagnosis and Research Advancement". The 4th International conference was conducted in 2023 on the theme **"Beyond Boundaries: Exploring Excellence in Basic Medical Sciences".** The highlights included Young Research Scholar Award presentations in Faculty, PhD, and Postgraduate categories, oral presentations in all categories and Poster competition for undergraduates. Apart from guest Lectures, there were panel discussion and e-workshop too. The number of registrations ranged from 800 - 1200 in the last 4 years for each conference.

About This Conference

Basic medical sciences are often relegated a backseat in the psyche of most doctors, its purpose often perceived to be as an "unavoidable existence". On the other hand the doctors trained in basic sciences often seem to struggle to put forth their perceptions in a convincing modality. Both these aspects merely represent ignorance and a primal territorial mind set.

The primary job of a medical doctor is to first understand health issues from its root, and subsequently to use this understanding in prophylactic and therapeutic health care. Understanding health issues from its root involves extensive understanding of the molecular mechanisms involved. These understandings are not merely academic exercises, but provide insights into planning novel therapeutic approaches. Even a cursory look into the latest specialized journals in any sub-discipline of medicine would not leave an iota of ambiguity about the importance of molecular understanding in contemporary medicine. Many doctors with molecular illiteracy, I am sure, have already started finding themselves redundant and overawed on having to face increasing numbers of literature abounding with molecular terminology. Many tend to consider such literature as an infringement on classical medicine. With practically every Nobel work on medicine in recent times revolving around molecular and subcellular realms, like it or not, it should become imperative on the part of medical doctors to be well versed with the world of these sub-microscopic particles and their role on human health.

Conferences such as the present one are an attempt at bridging the gaps in our understanding, as well as demystifying the world of these invisible particles. Molecular biology, Cell biology and Immunology are some of the terminologies used to describe the different facets of molecular functions, and the conference promises to provide these with sufficient information

5th INTERNATIONAL e-CONFERENCE 2024

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PROGRAM SCHEDULE ON DAY 1 – 04.12.2024 (Wednesday)			
Time	**Resource person**		**Scientific Talk**
9.00 am – 9.45 am		**Dr. Shiby G Stephens,** MBBS, MPhil, FHEA, SFHEA, FAcadMed, CIEA. Senior Lecturer, School of Biosciences, Cardiff University	**Speaking the language of Anatomy: Can being multilingual give you an edge?**
9.45 am – 10.15 am	**INAUGURATION**		
10.15 am – 11.15 am		**Dr. Barnali Das,** MD, DNB, PGDHHM, FADLM Lead Consultant, Biochemistry & Immunology, Kokilaben Dhirubhai Ambani Hospital &Medical Research Institute, Mumbai- 400053, India. Chair, ADLM (Formerly AACC) India Section	**Significance of Laboratory Automation & Artificial Intelligence in Biochemistry Lab**
11.15 am – 12.15 pm		**Dr. Doris George Yohannan,** MBBS , MD. Assistant Professor of Anatomy, Trivandrum Medical College, Kerala, India	**Innovating Anatomy Education: A Contemporary approach to a classic discipline**
12.15 pm – 1.15 pm		**Dr. Sundar Gnanavel,** MD(AIIMS, New Delhi) and MRCPsych (UK) Consultant child psychiatrist Cumbria, Northumberland, Tyne and Wear NHS Foundation trust, UK & Honorary senior clinical lecturer, Newcastle University	**Neurobiology of dreams**
2.00 pm- 5.00 Pm	Scientific Presentation for Young research scholar award (Faculty) and regular oral Presentation for PhD scholar, PG Students		

PROGRAM SCHEDULE ON DAY 2 – 05.12.2024 (Thursday)			
Time	**Resource person**		**Scientific Talk**
9.00 am – 9.45 am		**Dr. Nicolás M Phielipp,** MD, Associate Professor Parkinson's and Movement Disorders Program Department of Neurology UCI Health 19200 S Jamboree Rd Suite 4200 Irvine, CA 92612	**Regenerative strategies in Movement Disorders**
9.45 am – 10.30 am		**Dr. Sakthivel Arumugam,** Ph.D (Medical Biochemistry) AssociateProfessor, Biochemistry, Faculty of Medicine, AIMST University, Bedong-Kedah 08100, Malaysia.	**Transforming Research and Diagnostics: The Impact of Artificial Intelligence on Basic Medical Research Worldwide**
10.30 am – 11.15 am		**Dr. G.P. Pal,** MBBS MS DSc FASI, FAMS FNASc FASc, Bhatnagar Laureate. Adjunct Professor at Index Medical College, Indore	**Biomechanics of Human Spine**
11.15 am – 11.30 am	**TEA BREAK**		
11.30 am – 12.15 pm		**Dr. Mohd Iqbal Alam,** Professor & HOD, Department of Physiology, Hamdard Institute of Medical Sciences & Research(HIMSR), Hamdard Nagar, Delhi-110062.	**Exploring the role of HMGB1 in Hemodynamic Changes, Oxidative Stress, and Angiogenic Imbalance in an L-NAME-Induced preeclampsia**
12.15 pm – 1.00 pm		**Dr. Parthiban Srinivasan,** PhD, Professor and Director, Centre for AI in Medicine, Vinayaka Mission's Research Foundation, Puducherry	**Educating Future Doctors in Artificial Intelligence**
2.00 pm- 5.00 Pm	Presentation for Young research scholar award (PhD scholar, PG Students) and e-poster display for UG students		

PROGRAM SCHEDULE ON DAY 3 – 06.12.2024 (Friday)			
Time	**Resource person**		**Scientific Talk**
9.00 am – 10.00 am		**Dr. Khushpreet Kaur,** Postdoctoral Research Associate, Washington University School of Medicine, Saint Louis, Missouri, USA.	**NLRP3 inflammasome signalling in macrophage/ osteoclast lineage: Insights into bone health**
10.00 am – 11.00 am		**Dr. Amal Kant Bera,** Professor, Department of Biotechnology , IIT, Chennai	**Overcoming the Challenges of Drug-Resistant Epilepsy**
11.00 am – 11.15 am	**TEA BREAK**		
11.15 am – 12.15 pm		**Dr. Yogesh A Sontakke,** MBBS, MD (Anatomy), Additional Professor, Department of Anatomy, Academic Centre, Jawaharlal Institute of Postgraduate Medical Education & Research (JIPMER)	**The Art of Medical Illustrations in the Digital Era: From Sketch to Simulation**
12.15 pm – 1.15 pm		**Dr. Desai Vidya Sripad** Professor & HOD, Dept. of Biochemistry. AIIMS Mangalagiri,Andhra Pradesh	**miRNA epigenetic crosstalks**
2.00 pm- 4.30 Pm	Presentation for Young research scholar award (UG Students) and regular oral Presentation for Faculty		
4.30 pm - 5.00 pm	**VALEDICTORY FUNCATION**		

Focus of this conference

The recent advances in the fields of academics, diagnostics and research related to basic medical sciences with special emphasis on:

a. Innovation in education
b. Significance of Artificial Intelligence in education
c. Role of Artificial Intelligence in Basic Medical Research
d. Update on Medical illustrations through digital technology
e. Recent physiological concepts in neuropsychiatric disorders.

Objectives

- To serve as a platform for sharing the latest developments in the fields of diagnosis, research and teaching learning methodology related to basic medical sciences.
- To encourage the young budding medical professionals to present their research work and update their knowledge ultimately enhancing networking.

5th INTERNATIONAL e-CONFERENCE 2024

BMSeCON-2024-ANA-1067

Micronucleus Frequency in Cervical Smear to Assess Genetic Damage in Polycystic Ovarian Syndrome: An Observational Case-control Study

Showri R, Assistant Professor, Department of Anatomy, Dr. Chandramma Dayananda Sagar Institute of Medical Education and Research, Harohalli, Karnataka, India.
Rajini T, Professor, Department of Anatomy, Vydehi Institute of Medical Sciences and Research Centre, Bangalore, Karnataka, India.
Martin Lucas A, Professor and Head, Department of Anatomy, Dr. Chandramma Dayananda Sagar Institute of Medical Education and Research, Harohalli, Karnataka, India.

Introduction: Micronuclei are tiny structures detached from central nucleus observed in cells with numerical and/or structural chromosomal abnormalities in seemingly normal tissues, but primarily in carcinogen manifested tissues. Polycystic Ovarian Syndrome (PCOS) is a multifaceted endocrine and metabolic disorder with reproductive consequences. Although the cause of this condition is largely unclear, it is a complex multigenic condition with environmental and epigenetic impacts, including dietary and lifestyle choices. Women with PCOS have an increased risk of endometrial and ovarian cancer. However, there is unsatisfactory data to assess a relationship between PCOS and cervical cancer.

Aim: To compare and estimate the number of micronuclei in cervical smears of women with PCOS and controls and to compare and analyse the frequency of micronuclei in cervical smears with respect to Body Mass Index (BMI), menstrual irregularities and infertility of women with PCOS.

Materials and Methods: This observational case-control study included 38 controls and 38 subjects diagnosed with PCOS according to Rotterdam's criteria and aged between 18-40 years attending the Department of Obstetrics and Gynaecology in Vydehi Institute of Medical Sciences and Research Centre, Bengaluru, Karnataka, India. Data on BMI, menstrual irregularities and infertility were noted and assessed from all participants. Cervical smear samples were collected from all subjects, for micronuclei assessment.

Results: Mean±Standard Deviation (Mean±SD) of micronuclei frequencies in cervical smears was observed to be increased in the subjects with PCOS, when compared to control group ($p<0.0001$). Among women with PCOS, the micronuclei were found to be increased and statistically significant in those aged >25 years, BMI of >25 kg/m^2 and those with menstrual irregularities and infertility.

Conclusion: Micronuclei frequency was found to be elevated in cervical smears of women with PCOS indicating increased genetic instability and probable susceptibility to cervical cancer. It can be used in routine gynaecological examinations as an additional criterion for the early detection of cytogenetic damage.

Keywords: Menstrual irregularities, Micronuclei, Ovarian cancer.

BMSeCON-2024-ANA 1061

Variations in the Relations of Renal Vessels at the Hilum of Kidney: A Case Report

Sivapriya R, Junior Resident, Department of Anatomy, All India Institute of Medical Sciences, Bhubaneswar, Odisha, India.
Madhumita Patnaik, Additional Professor, Department of Anatomy, All India Institute of Medical Sciences, Bhubaneswar, Odisha, India.

Abstract: Renal arteries arise from the lateral aspect of abdominal aorta at L1 and L2 intervertebral disc level. Each kidney is drained by the corresponding renal vein. The renal vein, renal artery and renal pelvis are typically arranged anteroposteriorly in the hilum of the kidney. Variations in the hilar structures may lead to complications during urological and renal surgical procedures. The authors hereby report a case of bilateral variation in the renal hilar structures. During dissection, we found early branching of both the renal arteries into anterior and posterior division before reaching the corresponding hilum. The right renal arterial branches entered the hilum anterior to the renal vein and its tributaries. The anterior division of the left renal artery intervened between the anterior and posterior tributaries of the left renal vein. Renal pelvis occupied the posterior most position at the hilum bilaterally. Review of literature has shown that

in 73% cases, there exists some variation from typically described arrangement of renal hilar structures. The renal arterial variations include early branching and supernumerary renal arteries. Renal vascular variations have an embryological basis and may be due to the persistence of foetal vessels or abnormal interaction between transcription factors. It can be concluded that it is important to identify and describe the abnormal patterns of arrangement of renal hilar structures to reduce the occurrence of fatal haemorrhage and ureteropelvic obstruction during renal surgery and endovascular procedures like angioplasty.

Keywords: Renal hilum, Renal vein, Urological procedures.

BMSeCON-2024-ANA-1167

A Cross-sectional Study of Mastoid Process on Dry Skulls

S Jagapriya, Third Year Postgraduate Student, Department of Anatomy, PSG Institute of Medical Sciences and Research, Coimbatore, Tamil Nadu, India.

Introduction: Mastoid process is the downward projection from the mastoid part of the temporal bone located posteroinferior to external auditory meatus. It is the least prone site to be damaged due to its inferolateral location on the skull. Moreover, it is the most dimorphic bony feature of the skull. Due to its dimorphism, it is a favourable point for sex discrimination. It is larger in males than in females. Not only the size of mastoid process but also shape is a statistically significant gender indicator. Asterion is the junction of lambdoid, parietomastoid and the occipitomastoid sutures on the lateral aspect of the skull. It overlies the junction of transverse and sigmoid sinuses. Asterion is a landmark commonly used by neurosurgeons in cerebellopontine trigone surgery, transmastoid cisternoscopy, mastoid antrum surgery and venous sinus surgery. However, its location has population specific variations. Mastoid process is a palpable bony structure which enables to determine the location of asterion. Distance between apex of mastoid process and asterion is a valuable parameter for proper craniotomy.

Aim: To define details of mastoid process anatomy to enlighten surgeons, anatomists, anthropologists and forensic experts.

Materials and Methods: Present study will be conducted on 50 skulls of unknown sex in the Department of Anatomy, PSG Institute of Medical Sciences and Research, Coimbatore, Tamil Nadu, India. 100 mastoid process will be evaluated. Adult skulls with morphologic deformities, variations and skulls with Wormian bones will not be involved in the study for proper determinationof landmarks used in measurements. Landmark points and measurements to be taken on mastoid process are: X point: Asterion, Y point: Apex of mastoid process, Z point: Suprameatal spine, A line: Distance between X and Y points, B line: Distance between X and Z points, C line: Distance between Y and Z points, D line: Vertical distance between imaginary planefrom the superior border of external auditory meatus to Y point.

Conclusion: Mastoid process morphology and its anatomical relations are important for anatomists, neurosurgeons, anthropologists and forensic experts. As it is common centre of interest for multidiscipline, morphometry of this feature should be well-defined.

Keywords: Anatomical variation, Dimorphism, Mastoid part of temporal bone.

BMSeCON-2024-ANA-1167

A Cross-sectional Study on Unilateral Absence of Sternocleidomastoid Muscle

Swagatalokhi Bhattacharya, Final Year Undergraduate Student, Department of Anatomy, Zoram Medical College, Aizawl, Falkawn, Mizoram, India.

Introduction: The sternocleidomastoid, one of the largest and most superficial cervical muscles, is a key landmark of the neck diving it into anterior and lateral regions. It derives from paraxial mesoderm and occipital somites. The sternal head is a round fasciculus, tendinous in front, fleshy behind, travels superiorly, laterally, and posteriorly and the clavicular head is composed of fleshy and aponeurotic fibers, directed almost vertically upward. The absence of this key muscle can be due to congenital absence due to failure of development or acquired due to surgical removal including intramuscular haemangioma, pseudosarcomatous proliferative myositis and rupture of the sternocleidomastoid.

Aim: To study the variation of unilateral absence of Sternocleidomastoid Muscle (SCM) and its clinical implications.

Materials and Methods: In this cross-sectional study, specimens were obtained from Department of Anatomy, Zoram Medical College, Aizawl, Falkawn, Mizoram, India which is regulated by Mizoram Anatomy Act, 2019. It was conducted on 38 neck regions of 19 cadavers. The specimens were carefully dissected on both sides of the head and neck as per the Cunningham's manual. The data obtained were analysed and compared with literature.

Results: During routine dissection of cadavers for teaching purpose, in the study Institute, out of 38 specimens, unilateral absence of the

left SCM was found in one male cadaver aged around 60 years. There were no signs of surgical intervention, the carotid sheath was also absent and the vessels lied exposed, so it was most likely a case of congenital absence; however, absence of previous medical history of the cadaver is a limitation.

Conclusion: Absence of this muscle can lead to congenital neck hernias in children due to the absence of SCM cover and other implications on surgical procedures.

Keywords: Cervical muscles, Dissection, Sternum.

BMSeCON-2024-ANA-1063

Morphological and Morphometrical Study of Human Spleen- A Cadaveric Study

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Rakesh Sah, Assistant Professor, Department of Anatomy, DVVPF's Medical College, Ahmednagar, Maharashtra, India.
Sudhir Pawar, Professor and Head, Department of Anatomy, DVVPF's Medical College, Ahmednagar, Maharashtra, India.

Introduction: The spleen is classified as a secondary lymphoid organ. It is the largest lymphoid organ and lymphoid tissue aggregation in the body. In a variety of diseases, the spleen enlarges at different rates in its all dimensions which results in asymptomatic enlargement and complications such as rupture, haematoma and torsion that affect adjacent organs.

Aim: To correlate the morphometric parameters of the spleen in different sexes and comparison with the available data.

Materials and Methods: This cadaveric study was conducted on 52 (26 females and 26 males) formalin-fixed spleen in the Department of Anatomy, DVVPF's Medical College, Ahmednagar, Maharashtra, India. Length, breadth, and thickness of the spleen were measured with the help of vernier calliper. Volume was measured with the help of formula and different shapes of spleen were observed.

Results: The authors calculated the mean value and standard deviation of the length, breadth, thickness, and volume of the spleen, which were 116.82±22.54379 mm, 69.90692±20.7 mm, 40.16±11.506 mm, and 181.26±91.02 cm^3 in males, respectively. The mean value and standard deviation in females were 101.42±19.15 mm, 66.04±15.06 mm, 38.35±11.55 mm, and 140.47±56.64 cm^3, respectively. The authors observed different types of spleen. A comparison of the morphometric parameters of the spleen in different sexes was found to be statistically significant.

Conclusion: From this study, it was concluded that there is a significant correlation between the spleens of the males and females.

Keywords: Length, Spleen morphology, Thickness, Volume.

BMSeCON-2024-ANA-1155

A Cadaveric Study on Adductor Canal Block: Precise Localisation and Clinical Application

Radhika PM, Associate Professor, Department of Anatomy, Ramaiah Medical College, Bengaluru, Karnataka, India.

Introduction: Adductor canal block is a peripheral nerve block of the lower extremities generally used in knee surgeries to provide pain relief along the medial and anteromedial regions of the leg. It preserves quadriceps muscle strength, improves mobility and reduces risk of fall following total knee arthroplasty.

Aim: To analyse the morphometry of adductor canal and anatomical localisation of nerve to vastus medialis.

Materials and Methods: A cadaveric study was conducted in the Department of Anatomy, Sapthagiri Institute of Medical Science and Research Centre, Bengaluru, Karnataka, India, on 40 intact formalin fixed lower limb specimens. The length of the thigh was measured from the anterior superior iliac spine to the base of patella. Midpoint between the two was pinned. The thigh was meticulously dissected and the adductor canal was traced along both the ends. The lengths between proximal foramen and midpoint of the thighs, between distal foramen and base of patella and the length of adductor canal were recorded. The length of the base of patella to motor point of vastus medialis is recorded. The measurments were statistically analysed and summarised in terms of mean±Standard Deviation (SD). Independent test was used to compare these measurements between right and left.

Results: The average length of the thigh was about 46 cm. The average length of the adductor canal was about 13 cm. In 38 (95%) lower limbs, the proximal foramen was caudal to the mid-thigh. In 2 (5%) lower limbs the proximal foramen in cephalad to the mid-thigh. The average distance of the anterior superior iliac spine to the proximal foramen was 27 cms. The average distance of distal foramen to the base of the patella was about 6 cm. The average distance from base of patella to nerve to vastus medialis was 18 cm.

Conclusion: This regional block is of great help in case of surgeries like total knee arthroplasty, partial knee replacement, and Anterior Cruciate Ligament (ACL) reconstruction. It is known to help reduce physiological stress compared to general anaesthesia and avoid airway manipulation.

Keywords: Knee arthroplasty, Regional block, Saphenous nerve.

BMSeCON-2024-ANA-1090

Evaluating the Effect of Nardostachys Jatamansi in Dyslipidaemic Rats Induced by High-fat Diet: An Experimental Study

Preethi, PhD Scholar, Bharath Institute of Higher Education and Research, Chennai, Tamil Nadu, India; Assistant Professor, Department of Anatomy, KMCH Institute of Health Science and Research, Coimbatore, Tamil Nadu, India.
G Sumathy, Professor and Head, Department of Anatomy, Sree Balaji Dental College and Hospital, Chennai, Tamil Nadu, India.

Introduction: Dyslipidaemia, characterised by abnormal lipid levels in the blood, is a significant risk factor for cardiovascular diseases. High-fat diets are known to induce dyslipidaemia in animal models, making them useful for studying potential therapeutic interventions. Nardostachys Jatamansi has been traditionally used to improve health and may possess lipid-modulating properties.

Aim: To evaluate the protective effect of Nardostachys Jatamansi (NJ) ethanol extract on animal models of dyslipidaemia by observing the effects of a High-fat Diet (HFD) on Wistar albino rats' body weight, abdominal circumference, and lipid profile changes.

Materials and Methods: This experimental study was conducted in the Department of Anatomy, Sree Balaji Dental College and Hospital, Chennai, Tamil Nadu, India. The Wistar albino rats were divided into five groups: Group 1- Normal control rats received normal pellet diet with water ad libitum, Group 2- HFD group received HFD for 60 days ,Group 3- HFD+Rosuvastatin (10 mg/kg), Group 4- HFD+NJ 100 mg/kg, Group 5- HFD+NJ 200 mg/kg, and Group 6-HFD+NJ 300 mg/kg were treated as indicated for 60 days. Body weight analysis, abdominal circumference and serum lipid profile parameters were evaluated.

Results: The HFD group showed elevated levels of lipid profile and alterations in body weight as compared to the control group. Administration of standard drug Rosuvastatin (10 mg/kg), ethanolic extract of NJ (100, 200, and 300 mg/kg) to HFD group protected the animals from body weight changes and biochemical alterations.

Conclusion: The study findings reveal the protective role of NJ on HFD induced dyslipidaemia by implicating its antioxidant and therapeutic potential.

Keywords: Body weight, Dyslipidaemia, Lipid levels, Therapeutic.

BMSeCON-2024-ANA-1103

Histochemistry of Placental Alkaline Phosphatase in Both Normotensive and Preeclampsia: A Comparative Analysis

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Sundarapandian S, Professor and Head, Department of Anatomy, SRM Medical College, Kattankulathur, Tamil Nadu, India.
Rath S, Professor and Head, Department of Anatomy, SLNMCH, Koraput, Odisha, India.
Sujata S, Professor and Head, Department of Obstetrics and Gynaecology, SLNMCH, Koraput, Odisha, India.

Introduction: The enzymatic activity of Placental Alkaline Phosphatase (PALP) is increased in preeclampsia, which is a multifactorial disorder affecting 5-7% of pregnancies worldwide. Preeclampsia poses significant risks for maternal and neonatal morbidity and mortality, due to placental dysfunction. PALP's essential role in foetal growth, nutrient transport, immune regulation, and elucidating its activity helps to understand the pathophysiology of preeclampsia and identify therapeutic targets.

Aim: To PALP activity in both normotensive and preeclampsia patients to assess the placental dysfunction and its relationship with foetal developments.

Methodology: A comparative analysis was conducted in the Department of Anatomy, Saheed Laxman Nayak Medical College, Koraput, Odisha, India by taking 100 placentae, including 50 from normotensive and 50 from preeclamptic pregnancies, collected immediately post-delivery. PALP activity was quantitatively assessed by using Immunohistochemistry staining to visualise the enzymatic localisation and its intensity. The PALP levels were compared across groups.

Results: Findings indicate a statistically significant increase in the intensity of PALP localisation in preeclamptic placentae as compared to normotensive pregnancies ($p<0.01$). The increased activity of PALP is a compensatory mechanism in response to the placental ischaemia, in order to meet the increased metabolic demands during preeclampsia. Notably, elevated PALP activity correlates with indices of impaired foetal nutrient transfer and growth restriction in complicated pregnancies. The elevated PALP expression in preeclampsia shows a significant relation between placental ischaemia and uteroplacental insufficiency as underlying pathophysiology of preeclampsia.

Conclusion: The study concludes that PALP could serve as a surrogative marker for detecting placental dysfunction in pregnancy and may improve clinical outcomes in both mothers and neonates.

Keywords: Enzymatic activity, Placental dysfunction, Pregnancy.

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Comparative Dermatoglyphic: An Exploratory Study of Type II Diabetes Mellitus with Non Diabetic Populations

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Introduction: Dermatoglyphics, the study of skin ridge patterns on fingers, palms, and soles, may hold clues to identifying genetic predispositions to Type 2 Diabetes Mellitus (DM2). With the incidence of DM2 on the rise, researchers are seeking simple, non invasive methods for early detection.

Materials and Methods: This study consisted of 300 participants, divided into two groups: a) 150 DM2 patients (75 males, 75 females) b) 150 non diabetic controls (75 males, 75 females). Fingerprint analysis was conducted using the Ink Method, assessing both qualitative and quantitative parameters to identify potential differences between DM2 patients and controls.

Results: The present comparative study revealed significant differences in fingerprint patterns between DM2 patients and controls.

The key findings were: a) Increased whorl frequency in both hands of male and female DM2 patients compared to controls. b) Higher ulnar loop frequency in controls compared to DM2 patients. c) Fingertip ridge counts were significantly higher in diabetics of both sexes, except L2 and R1 in males and R5 in females.

Conclusion: These results suggest distinct fingerprint patterns in DM2 patients, potentially serving as a diagnostic biomarker. Dermatoglyphics can be used for early and inexpensive screening of individuals at risk for DM2.

Keywords: Fingerprints, Ink method, Skin ridge pattern.

BMSeCON-2024-ANA-1102

Anatomical Variations of the Vertebral Arteries on CT Angiography: A Cross-sectional Study of Age and Gender Differences

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Introduction: The Vertebral Arteries (VA), integral components of posterior cerebral circulation, demonstrate considerable anatomical variability that can significantly impact cerebrovascular health and surgical outcomes.

Aim: To investigate bilateral VA variations and their demographic correlations.

Materials and Methods: A cross-sectional study was conducted in the Department of Anatomy, LNCT Medical College and Seva Kunj Hospital, Indore, Madhya Pradesh, India. The Computed Tomography (CT) angiography scans from 245 adults were analysed between January 2023 and December 2023. Inclusion criteria comprised adults aged ≥20 years referred for CT angiography. Contrast-enhanced CT angiography was performed using standardised protocols. Statistical analysis included Chi-square tests and multivariate logistic regression to assess anatomical variations.

Results: Anatomical variations were observed in 27.3% of participants (95% CI: 24.1-30.5%). Gender analysis showed higher variation rates in females (29.8%) compared to males (25.1%) (χ^2=9.14, p=0.002). Age-stratified analysis revealed increasing variation rates: 18.7% in 20-40 years, 31.2% in 41-60 years, and 33.9% in >60 years (p<0.001). Left VA variations (16.4%) were more common than right VA variations (10.9%). Multivariate analysis identified significant associations between age and tortuosity (OR: 1.94, 95% CI: 1.45-2.59, p<0.001).

Conclusion: This study demonstrates significant demographic correlations with VA variations, particularly age-dependent changes and left-sided predominance. These findings have important implications for neurosurgical planning and risk assessment.

Keywords: Cerebral circulation, Computed tomography, Neurosurgical planning

BMSeCON-2024-ANA-1125

Anatomy of Intermediate Cervical Ganglion: A Descriptive Cadaveric Study

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Introduction: The Vertebral Ganglion (VG) is seen close to the origin of vertebral artery. It is the intermediate cervical ganglion which is placed between the middle cervical ganglion and inferior cervical ganglion.

Aim: To identify the VG in the cervical sympathetic chain, to study the morphological parameters VG and to study the relation of VG with the vertebral artery.

Materials and Methods: This descriptive cadaveric study was conducted in the Department of Anatomy, SRIHER, Chennai, Tamil Nadu, India. A total of 25 human adult cadavers of both sexes were studied.

Results: VG was present only in 34 cervical sympathetic chains. VG was located near to the body of C7 in all the studied specimens. VG was anteriorly related to vertebral artery in all the specimens. Morphological details were noted. Middle cervical ganglion and VG co-existed only in 20% of specimens.

Conclusion: Study of the cervical sympathetic chain and its variations will minimise the risk and complications of sympathectomies. Study revealed the presence of VG in 68% of the specimens and many previous studies stated similar results. Absence of middle cervical ganglion in the presence of VG rules out the concept of detached part of middle cervical ganglion being represented as intermediate cervical ganglion.

Keywords: Sympathetic chain, Vertebral artery, Vertebral ganglion.

BMSeCON-2024-ANA-1045

A Cross-sectional Study on Morphometry of Proximal End of Femur on Dry Bones and its Clinical Significance

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Introduction: Hip joints have significant role in human locomotion. Measurement of different parameters of proximal ends of femur help the clinicians for treatment of proximal femur fractures and also helpful for biomechanical engineers to formation of prosthetic limb.

Aim: To measure different parameters: Head Transverse Diameter (HTD), Neck Transverse Diameter (NTD), Femoral Neck Length (FNL), Head Vertical Diameter (HVD), and Neck Vertical Diameter (NVD) on femur bones.

Materials and Methods: A total of 83 dried non pathological femur bones of both right and left were collected from the Department of Anatomy of KPC Medical College and Hospital (KPC MCH), Jadavpur, Kolkata, West Bengal, India. The diifferent parameters were measured by a digital vernier callipers.

Results: The different parameters studied on right and left femur bones showed the following results:

Parameters (mm)	Left side Mean	Right side Mean
Head Transverse Diameter (HTD)	36.7	37.82
Neck Transverse Diameter (NTD)	21.54	22.6
Femoral Neck Length (FNL)	44.2	43.82
Head Vertical Diameter (HVD)	35.38	36.86
Neck Vertical Diameter (NVD)	28.7	26.61

Conclusion: The morphometric data revealed from the present study will be helpful in desigining of implants suitable for the Asian population and also to the orthopaedicians to deal more accurately for the prevention and management of hip injuries. The knowledge of the study may help the orthopaedic surgeons to insert intramedullary nails, plates, screws, and pins more accurately to avoid neurovascular complications.

Keywords: Femur bone, Hip joints, Prosthetic limb.

BMSeCON-2024-ANA-1082

Morphometric Analysis of Typical Thoracic Vertebrae in South Indian Population

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Introduction: Understanding the morphometric properties of thoracic vertebrae is indispensable in several clinical contexts, including the diagnosis and the development of spinal implants and prosthetics.

Aim: To conduct a comprehensive morphometric analysis of typical thoracic vertebrae (T2-T9) in the South Indian population to establish baseline anatomical data and explore its clinical implications.

Materials and Methods: The present morphometric analysis comprised of 70 adult typical thoracic vertebrae collected from the Department of Anatomy, Mahavir Institute of Medical sciences, Vikarabad, Telangana, India. Various parameters including vertebral body height, width, anterior and posterior thicknesses, pedicle dimensions, laminae dimensions, and vertebral foramen dimensions were measured using vernier callipers.

Results: The mean±Standard Deviation (SD) transverse and anteroposterior diameters of the bodies were 31.49±3.35 mm and 22.05±3.53 mm, respectively. The anterior and posterior thicknesses of the bodies were 18.66±1.76 mm and 17.32±1.56 mm, respectively. The laminar height and thickness were 18.11±2.61 mm and 6.84±2.12 mm, respectively. The pedicle height and thickness were 10.69±1.53 mm and 5.23±1.37 mm, respectively. The vertebral foramen transverse and anteroposterior diameters were 15.61±1.34 mm and 13.75±1.26 mm, respectively.

Conclusion: Clinically, these morphometric findings are crucial for orthpaedic surgeons and radiologists. Accurate knowledge of vertebral dimensions can enhance the precision of spinal instrumentation, reducing the risk of complications such as pedicle screw misplacement. Furthermore, this data can assist in the customisation of spinal implants tailored to the anatomical characteristics of the South Indian population, potentially improving surgical outcomes.

Keywords: Pedicle screw, Spinal implants, Thoracic, Vertebra.

BMSeCON-2024-ANA-1047

Congenital Brevicollis Syndrome: A Case Report

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Abstract: Normally the typical cervical vertebrae (C3-C6) are characterised by small bodies, triangular spinal canals, presence of foramen transversarium and short bifid spines. The congenital fusion of cervical vertebrae may be associated with the Klippel-Feil syndrome, which is a congenital anatomical defect in the neck, including fusion of two or more cervical vertebrae. This is also known as congenital Brevicollis syndrome. Feil classified this syndrome into three types which will be discussed in the case report along with its aetiology. The objective was to report a rare fusion of the typical cervical vertebrae (C5 and C6) and to highlight the morphological variations and its developmental and clinical insight. During the routine osteology tutorial class for medical students, authors observed a fused block of typical cervical (C5 and C6) vertebral complex in the Department of Anatomy of the study Institute. The findings were that the bodies of the typical cervical vertebral complex (C5 and C6) were totally fused over the posterior aspect and slightly fused on the anterior aspect. The laminae on the right side were not fused and on the left side it was totally fused. The inferior articular facets on both the sides were totally fused with the superior articular facets of the typical cervical vertebra below. The foramen transversarium and vertebral canals were patent. Hence, it can be concluded that the congenital fusion of the typical cervical vertebrae may lead to biochemical stress on the adjoining segments of the cervical vertebrae leading to cervical spondylosis and neurological complications due to nerve compression.

Keywords: Anatomical variations, Block, Cervical vertebrae, Fusion of vertebrae.

BMSeCON-2024-ANA-1065

A Case of Renal Agenesis with Ipsilateral Ureterocele and Blind Ending Distal Ureter in an Adult: Clinical and Embryological Significance

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Abstract: Ureterocele in adults is usually reported to be an isolated urinary tract abnormality and has a normal ureteral insertion at the Vesicoureteral Junction (VUJ). Ureterocele and association of congenital anomalies is well known but concomitant presence of ureterocele, renal agenesis, and a blind ending ureter is a very rare occurrence. Only six such cases have been reported previously in literature. The present case report is presented to contribute to existing knowledge of genitourinary anomalies by highlighting the clinical and embryological significance of ureterocele and renal agenesis, in patients with lower urinary tract symptoms in adult life. Hereby, the authors present a 47-year-old male patient presented to the urology department, with history of mixed voiding and storage lower urinary tract symptoms. Clinical examination was normal. The patient was evaluated with ultrasound of abdomen, which revealed absent right kidney in the right renal fossa and right side ureterocele in urinary bladder. The Computed Tomography (CT) study showed absent right kidney with a normally functioning left kidney. Left ureter was normal. However, there was no evidence of any cystic lesion in or near the urinary bladder. Office cystoscopy was performed and presence of right ureterocele was confirmed. Magnetic Resonance Imaging (MRI) images demonstrated right renal agenesis. Proximal and mid right ureter were not visualised with distal most part showing focal cystic dilation at right vesicoureteral junction-representing ureterocele. The clinical and embryological significance of the anomaly have been discussed. So, it can be concluded that although adult simple ureteroceles and unilateral renal agenesis are not that uncommon anomalies in isolation but concomitant presence of ureterocele, renal agenesis, and a blind ureteral remnant is a very rare occurrence, especially in adults. Hence, embryological basis and knowledge of these anomalies helps clinician to have a high index of suspicion to identify and carry out early investigation to have prompt management of the condition.

Keywords: Genitourinary anomalies, Kidney, Ureteral insertion.

BMSeCON-2024-ANA-1168

Sacroiliac Joint Calcification: A Case Report

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Abstract: The sacroiliac joints formed by the articulation of lateral surface of sacrum on either side with the pelvic surface of the innominate bones. The anterior and the dorsal sacroiliac ligament support the joint. The objectives of the present case was to determine the importance of ossification of ligaments and its subsequent effect on movement of sacroiliac joint, and to help in avoiding misdiagnosis by clinician in identifying pain related to sacroiliac joint and help in management strategies. During demonstration classes of first year MBBS students, it was noted that a dry male pelvis was identified with complete ossification of the anterior and dorsal sacroiliac ligaments, which are present on anterior and posterior surfaces of sacroiliac joint on both the sides. The present case report brings out an unreported anatomical variant of complete ossification of anterior and dorsal sacroiliac ligaments. The knowledge will be of paramount importance to clinicians to identify pain, to radiologists for interpretation of radiographs and to anatomists for study purpose.

Keywords: Ossification, Sacroiliac ligament, Sacrum.

BMSeCON-2024-ANA-1011

Variations in the Attachment of Horns of Menisci of Knee Joints and its Clinical Insinuations: A Cadaveric Study

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Introduction: Menisci have crucial roles in the transmission of weight, shock absorption, proprioception, joint lubrication, stability, and joint nourishment. Meniscus injuries are frequent in both activities and sports. According to reviews, there are numerous bony and ligamentous insertions of anterior horn of medial menisci.

Aim: To study the variations in the attachment of anterior and posterior horn of medial menisci and lateral menisci of knee joint in cadavers.

Materials and Methods: An observational cadaveric study done in 24 months duration includes 30 cadaveric knee joints with intact menisci, muscles and tendons from 15 cadavers were included in the study in the Department of Anatomy, AIIMS Rishikesh, Uttarakhand, India. According to Cunningham's (15th edition) method cadaveric knee joints of either sex were dissected and different types or ligamentous and bony attachment of menisci horns was observed.

Results: In the present study population, the variations of menisci horns on the basis of attachment were found commonly in the anterior horn of medial menisci. Type III bony attachment (46.6%) was the most common accompanied by type I (40%) and type II (13.33%). Type IV (50%) was more common accompanied by type I (33.3%) and type II (16.6%). Anterior horn of lateral menisci shows connection to the Anterior Cruciate Ligament (ACL) in 10% cases.

Conclusion: This study highlights the significant variations in meniscal horn attachments, particularly in the anterior horn of the medial meniscus. These findings underscore the importance of understanding meniscal variations for effective diagnosis and treatment of knee pathologies, and may inform surgical approaches and rehabilitation strategies.

Keywords: Menisci horns, Meniscus injuries, Tendons.

BMSeCON-2024-ANA-1054

Morphology of Superficial Palmar Arches in the Eastern Region of India: A Cross-sectional Cadaveric Study

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Introduction: Understanding the morphology of Superficial Palmar Arches (SPA) and their variation is essential for several clinical applications, including surgical procedures, hand reconstructive surgeries, and diagnostic imaging. The study related to the morphology of the SPA is very limited to the eastern region of India.

Aim: To study the SPA formation and branching patterns among cadavers.

Materials and Methods: A cross-sectional cadaveric study was conducted in the Department of Anatomy, R G Kar Medical College, Kolkata, West Bengal, India on 14 male and 11 female adult embalmed cadavers throughout one and a half years in the dissection hall of the Department of Anatomy. A total of 50 hands were properly dissected, and the type and branching pattern of the SPA were observed. The data was tabulated and analysed using Microsoft Excel.

Results: Complete type of arch was common in both male and female cadavers. The arch formed by the ulnar artery (Type B according to Coleman and Anson's classification) was most predominant, followed by an arch made of the superficial palmar branch of the radial artery and the ulnar artery (Type A). Incomplete arches were observed in 20% of cases. Type I and II branching patterns of SPA were seen among the cadavers.

Conclusion: The present study revealed that complete SPA was the hand's most common type of arterial arch. However, the incomplete arch type was also noted in the study sample, which can have clinical implications for hand surgery and reconstructive procedures. The study results will help in preoperative planning and improve outcomes in hand surgeries in the Eastern region of India.

Keywords: Arterial arch, Branching pattern, Hand surgeries.

BMSeCON-2024-ANA-1071

Morphologic and Morphometric Analysis of Arcade of Frohse with Surgical Implications

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Introduction: Arcade of Frohse (AF) is the free aponeurotic proximal edge of the superficial part of supinator muscle. The Posterior Interosseous Nerve (PIN) passes deep to it before entering supinator muscle. AF is the most frequent cause of PIN compression and radial tunnel syndrome. Knowledge of anatomy of AF is essential for surgeons while performing PIN decompression surgery.

Aim: To study the morphology and morphometry of AF.

Materials and Methods: A morphologic and morphometric analysis was conducted in the Department of Anatomy, Yenepoya Medical College, Mangaluru, Karnataka, India between August 2022 to July 2024 (2 years). The AF was dissected out and studied in 50 upper limbs of adult human cadavers. Its shape and consistency were studied. The length, width and thickness of the arcade were measured using Vernier callipers.

Results: Morphometry: mean width (10.12±1.57 mm), mean length (12.83±2.52 mm), mean thickness (0.32±0.39 mm) and mean arcade ratio (0.198±0.022 mm). Morphology: shape (oblique elongated- 72%, semicircular- 23%, semioval- 5%) nature (tendinous- 85%, membranous- 15%).

Conclusion: The morphometry of the AF is extremely important for a surgeon who performs regional operative and decompression procedures.

Keywords: Decompression surgery, Posterior Interosseous nerve, Supinator muscle.

BMSeCON-2024-ANA-1133

Femoral Shaft Curvature and Study of the Design of Intramedullary Nails: A Cross-sectional Study

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Introduction: The femur is the longest and strongest bone in the human body. Its shaft, almost cylindrical along most of its length and is bowed forwards. Several anthropological studies have dealt with the compatibility of femoral prostheses. Intramedullary nailing is currently accepted as the gold standard in the treatment of diaphyseal femur fractures. Mismatch between the radii of curvature of the intramedullary nails and the anterior bowing of femur result in angular defects, iatrogenic fractures, and penetration of the distal anterior femoral cortical bone.

Aim: To measure the radius and angle of curvature of femur bones and compare it with the contemporary intramedullary nails available for routine surgical procedures.

Materials and Methods: A cross-sectional study was conducted on a total of 634 dry human femur bones specimens without structural deformities were studied to measure the radii and angle of curvature in the Department of Anatomy, Dr. BRAMC and SIMS & RC, Bengaluru, Karnataka, India between August 2021 to July 2024. The radius and angle of curvature of femur bones were measured, tabulated and compared with intramedullary nails. Statistical analysis was carried out with the help of IBM-SPSS (IBM Corporation) and Microsoft Excel.

Results: The mean radii of curvature and mean angle of curvature of femur was 68.7 cm and 29.8 degree, respectively. The radii of curvature and angle of curvature of intramedullary nails were between 180-200 cm and 15-25, respectively.

Conclusion: These difference in current clinical practice implicates the inadequacy of the design for at least the Indian population. Intramedullary nails should be redesigned accordingly to prevent the complications.

Keywords: Anthropological, Iatrogenic, Prosthesis, Radius of curvature.

BMSeCON-2024-ANA-1126

Histological Efficacy of Tissues from Embalmed Cadavers for Medical Education: A Cross-sectional Study

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Introduction: With introduction of early clinical exposure to competency based medical education there is a transition of medical schools toward integrating clinical medicine with the basic science oriented years to enhance the ability to correlate pathophysiological concepts with clinical manifestations and management of diseases. There is a limited literature on how this is implemented in previously stand alone disciplines such as histology and pathology, depriving students of important parts of medical education. This calls for innovative approaches to reintegrate these experiences into medical school curricula as there are many variations seen in cadavers in gross anatomy dissections. These gross pathology findings provide students with an opportunity to integrate their basic science understanding with clinical medicine. By integrating pathology with anatomy, it has been shown that students were more able to identify, retain and integrate their understanding of pathology into their discussions and medical reasoning. Also, there is a very scanty literature on use of tissues from a formalin embalmed cadaver for forensic histopathology. There are some doubts on validity because of previous contradicting literature showing poor preservation and embalmment related artifacts. this study aimed to investigate the histological samples of tissues like thyroid, bone, skin or skeletal muscle, lungs and liver from embalmed cadavers to provide an initial assessment regarding their reliability, and thus highlight their potential in medical education. This explore the possibility of utilising tissues from formalin-embalmed cadavers for teaching purposes, for which tissue samples are routinely taken from guinea pigs, rabbits, etc. The present study is an attempt to bridge the shortage of tissues available for histopathological examination.

Aim: To investigate the histological samples of tissues from embalmed cadavers regarding their reliability, and thus highlight their potential in medical education.

Materials and Methods: A cross-sectional study was conducted in the Department of Anatomy, Yenepoya Medical College, Mangaluru, Karnataka, India between November 2023 to November 2024. Tissues samples were obtained from embalmed cadavers used for dissection (N=12). Cadavers without any pathology to the tissues were selected for the study. Tissue samples were obtained from skin, liver, lungs, skeletal muscle, bone and thyroid and were dissected

according to the procedure mentioned in the Cunninghams dissection manual. Tissues were collected separately in a labelled containers. The tissues were stained with routine eosin and haematoxylin stains as per the standard procedure followed for staining. The slides obtained were compared with the slides of guinea pig.

Results: The cadaveric tissues were hard and was difficult to take serial sections when compared with that of guinea pig, whereas there was no much distortion of normal histological features in the tisues obtained from the cadavers.

Conclusion: Results from the present study shows that that cadaveric tissues can be used in the preparation of histological slides and can be used for teaching purposes.

Keywords: Cadaveric tissues, Histology, Organs.

BMSeCON-2024-ANA-1088

An Observational Study on Morphometry of Plastinated External Auditory Canals: A Clinical Perspective

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Introduction: Anatomical models are three-dimensional, homologous models which present anatomical structures life size or enlarged form. These models not only serve as display material but can be utilised as effective learning materials for the study of Anatomy pertaining to certain complex structures of the body like ear and larynx. Plastination is a technique which uses polymers such as resin and silicone in order to create life-like specimens or models. Luminal cast plastination is useful to study the dimensions and architecture of different cavities of organs and to study the tubular - arterial, venous, ductal branches and their variations. An attempt has been made to plastinate the External Auditory Canal (EAC) using silicone. This study enhances the understanding of otolaryngologists and anatomists regarding the complex morphology and variability of the EAC.

Aim: To measure the dimensions of plastinates of the EAC and to correlate the dimensions of the plastinates with standard measurements.

Materials and Methods: A prospective, observational study was done on 30 cadavers in the Department of Anatomy, CDSIMER, Kanakapura, Karnataka, India. Silicone was injected into the EACs and the casts were obtained.

Results: The morphometric analysis of the casts will be discussed during presentation.

Conclusion: The silicone cast can be used as a museum specimen and for medical students in surgical training and experimental otological surgeries. The morphometric measurements of the EACs helps in finding if there is a difference in parameters between the side and gender variability which is useful in designing ear prosthesis.

Keywords: Ear prosthesis, Plastinates, Silicone.

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Incidence of Accessory Spleen in North Indian Population: A Retrospective Cadaveric Study

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Introduction: The present study was done to determine the incidence and location of accessory spleen in cadaveric specimens. Splenic anomalies can vary greatly in terms of size, number, location, and shape. Variations may be acquired or congenital. A common congenital anomaly, an accessory spleen, typically presents asymptomatically but can also cause consequences such as torsion, spontaneous rupture, haemorrhage, and cyst development. It is critical to understand splenic variations and anomalies in order to prevent misdiagnoses and diagnostic traps.

Aim: To examine and record dimensions of accessory spleen and understand splenic variations.

Materials and Methods: The present retrospective study was done on 42 specimens of cadaveric spleens at Government Medical College, Srinagar, Jammu and Kashmir, India. All the specimens were examined for accessory spleen and the dimensions of the accessory spleen were recorded.

Results: Out of 42 specimens, an accessory spleen was found in one specimen (2.3%) at its hilum region. Dimensions of accessory spleen were found to be 10×10 mm (1 cm×1 cm).

Conclusion: The findings obtained from this study will be helpful for operating surgeons, interventional radiologists, and anatomists in routine cadaveric dissections.

Keywords: Anomalies, Dissections, Splenic variations.

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Unmasking the Lesion of Floor of the Mouth: A Clinicopathological Case Series

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Abstract: The floor of the mouth, a part of oral cavity, is masked by the tongue having heterogenic structures like salivary glands, muscles, adipose, potential spaces and richly supplied with vasculature, nerve innervations and lymphatics. The wide range of superficial and deeply placed pathology may arise from these structures and vulnerable to spread of oral infection to other vital organs and cause morbidity. It also challenges the clinician to diagnosis due to its heterogeneity of pathology. Asymptomatic swellings are diagnosed at a later stage. There is a minimal emphasis on clinical examination. Deep seated lesions are masked by superficial soft tissue. The current paper is aimed to unmask the four different lesions from four category of origin as described: 1) Embryonic abnormalities: Dermoid cyst, 2) Pseudo cystic lesion from sublingual salivary gland: Ranula, 3) Salivary gland inflammation- Sialoadenitis, and 4) Epidermoid carcinoma. Dermoid cyst is the second most common lesion, occurring in 11.5% of individuals. Ranula is the most common pseudocyst noticed. Sialolithiasis is most common in submandibular gland due to tortuous course of Wharton's duct. There is fast spread of infection to the spaces (cellulitis, Ludwig's angina) and even spread to vital structures like lungs and heart. The floor of the mouth cancer represents approximately 15% of all intra-oral carcinoma and may invade and metastasise into deeper tissues. It is usually difficult to treat and frequently unsuccessful in the floor of the mouth carcinoma because of the complex anatomy of the region. Hence, it can be concluded that thorough history taking and clinical examination with appropriate investigation is essential for diagnosis.

Keywords: Mouth carcinoma, Ranula, Sialolithiasis.

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Identification of Scardovia Wiggsiae in Children between Severe Early Childhood Caries and Caries-free Children: A Qualitative Polymerase Chain Reaction-based Study

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Introduction: Normal microbial flora is a term that denotes the population of microorganisms that inhabit the skin and mucous membrane of normal healthy individuals. Disturbances in this microflora can be pathogenic causing disease. Dental caries is the most common microbial disease of oral cavity which develops in early infancy leading to Early Childhood Caries (ECC) and is considered to be the most common chronic infectious disease of childhood. Although *Streptococcus mutans* is well-known primary cause of severe ECC, some studies support the view that caries can develop in the absence of *S. mutans*. Recently, it has been found that Scardovia wiggsiae, a gram-positive anaerobe to be significantly associated with ECC both in the presence and absence of *S. mutans*.

Aim: To compare the presence of S. wiggsiae in the saliva samples of caries-free children and children with severe ECC, hence determine whether this new acidogenic caries-associated species could be candidates as caries pathogens in ECC.

Materials and Methods: A qualitative Polymerase Chain Reaction (PCR)-based study was conducted in the Department of Oral and Maxillofacial Pathology and Oral Microbiology, Indira Gandhi Institute of Dental Sciences, SBV University, Puducherry, India between January 2020 to January 2021. Saliva samples from 40 children between 3-6 years were collected which were submitted for PCR analysis. Deoxyribonucleic Acid (DNA) extraction was done followed by screening using PCR to evaluate the presence of S. wiggsiae.

Results: The tested samples revealed almost equal proportion of S. wiggsiae among the two groups. There was no difference in the prevalence of S. wiggsiae between caries-free and severe ECC groups.

Conclusion: The present study concludes that S. wiggsiae is not associated with ECC, rather its presence can be detected even in children without caries.

Keywords: Dental caries, Gram-positive anaerobe, Microbial flora.

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A Cross-sectional Morphological Study of Human Scalp Hair in Relevance to Thyroid Disorders

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Introduction: Thyroid hormone imbalance is the standard scale for its impression on numerous physiological functions, like hair growth and complete well-being of the scalp.

Aim: To find the association between thyroid hormone function and hair morphology and its characteristics in individuals with normal thyroid function, hyperthyroidism and hypothyroidism.

Materials and Methods: A cross-sectional morphological study was conducted in the Department of Anatomy, Vinayaka Mission's Kirupananda Variyar Medical College and Hospitals, Vinayaka Mission's Research Foundation (DU), Salem, Tamil Nadu, India between July 2022 to November 2024. Individuals aged between 26 to 50 years were included in the study. The study group included 103 females and 107 males. Individuals were categorised into control, hyperthyroid and hypothyroid based on thyroid function tests. Hair morphology and trichoscopy along with scalp biopsy was done to analyse the association between thyroid hormone function and hair morphology.

Results: Participants with hyperthyroidism confirmed decreased hair density and increased hair loss, while those with hypothyroidism displayed prominent decreases in hair thickness and irregularities in the hair growth distribution phases. Histopathological observation of scalp hair samples presented additional understandings of morphological changes linked with thyroid dysfunction. Noteworthy findings such as follicular atrophy, deviations in the dermal papilla structure and aberrations in the sebaceous gland morphology. These remarks resemble with clinical indications such as telogen effluvium and alopecia normally seen in thyroid disorders. Present study highlights the scalp hair features and histopathological outcomes as additional indication for evaluating thyroid function. By illustrating the biological mechanisms that determine these dermatological variations, present work illustrates the significance of interdisciplinary approaches in addressing skin condition in correlation with thyroid hormones.

Conclusion: Further, these findings open way for targeted treatments and improved diagnostic accuracy for individuals undergoing thyroid dysfunction. Ultimately this detailed examination underlines the impact of thyroid hormones on hair morphology, which is contributory to an extend understanding of the connection among endocrine well-being and dermatological problems.

Keywords: Hair follicles, Skin, Thyroid hormone.

BMSeCON-2024-ANA-1135

An Observational Cross-sectional Study on the Sexual Dimorphism in Shape Index and 2D:4D Ratio in Haryanavi Brahmins

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Introduction: The personal identification particularly sex from extremities become increasingly important in cases of mass disasters. Sex has been determined from skeletal remains and different body parts in different studies in the past.

Aim: To provide a database on right and left hand anthropometric measurements (Shape index and 2D:4D ratio) in Haryanvi Brahmins and evaluating its sex differences.

Materials and Methods: The present observational cross-sectional study was conducted in the Department of Anatomy, Kalpana Chawla Government Medical College, Karnal, Haryana, India for two years on 300 Haryanvi Brahmins (150 of either sex) of age 18 years and above. The measurements shape index and 2D:4D ratio were studied using the sliding calliper. All the data so obtained was recorded, tabulated and statistically analysed.

Results: The difference in mean values of shape index between males and females was highly significant in Haryanavi Brahmins whereas the difference in 2D:4D ratio between males and females was highly significant in Haryanavi brahmins on the right side but not on left side.

Conclusion: Mean value of shape index was more in males as compared to females in Haryanvi Brahmins. Mean 2D:4D values were more in females as compared to males.

Keywords: Anthropometric measurements, Sex determination, Skeletal remains.

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Morphometric Study of Dry Talus Bone in a Medical College of North Bihar, India

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Introduction: The talus bone plays a critical role in human biomechanics, supporting weight transfer between the leg and foot. Morphometric studies of the talus provide valuable insights into foot structure and function, aiding in forensic identification and orthopedic applications. The present study examined 100 dry human tali to assess morphometric variations.

Aim: To measure key morphometric parameters of the talus, compare findings across genders, and contribute baseline data for clinical and forensic applications.

Materials and Methods: A morphometric study was conducted in the Department of Anatomy, Darbhanga Medical College, Darbhanga, Bihar, India, in which a total of 100 dry talus bones (50 males and 50 females) were analysed. Measurements included talar length, width, height, and the angle of the trochlear surface. Digital callipers ensured precision, and data were statistically analysed to identify significant differences between male and female specimens.

Results: Significant morphometric differences were observed between male and female tali. Male tali showed greater length, width, and height than female tali, while the trochlear angle varied only slightly between genders. These differences may reflect adaptations to different load-bearing requirements in males and females.

Conclusion: The study's findings align with prior research on sexual dimorphism in talus morphology. The observed differences may be due to genetic and environmental factors impacting bone structure. Additionally, the data serve as a reference for orthopaedic and forensic investigations in diverse populations. This morphometric analysis of the talus reveals distinct gender-based differences, contributing valuable data for clinical and forensic applications.

Keywords: Bone anatomy, Forensic identification, Morphometry, Sexual dimorphism.

BMSeCON-2024-ANA-1083

An Interventional Study on Gamification in Anatomy: Enhancing First M.B.B.S Learning with Quizizz

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Introduction: First-year MBBS students often face challenges in mastering the vast and intricate subject of anatomy. Traditional teaching methods may not sufficiently address the need for active engagement and effective retention. Quizizz, a gamified platform, integrates engaging question formats, instant feedback, and leaderboards, making learning interactive and enjoyable. This study explores the use of Quizizz, a gamified online platform, to enhance the teaching and learning of anatomy for first-year MBBS students. The findings suggest that gamification offers an effective adjunct to traditional teaching methods for medical education.

Aim: To evaluate the impact of Quizizz on knowledge retention in general anatomy and to assess student engagement and perceptions of Quizizz as a teaching tool.

Materials and Methods: A two-week interventional was conducted with first-year MBBS students in the Department of Anatomy, Apollo Institute of Medical Sciences and Research, Hyderabad, Telangana, India. The study focussed on general anatomy topics, including the introduction to anatomical terms, planes, and basic structural organisation. Intervention: 1. Live Quiz Sessions: Conducted after each lecture to reinforce key concepts. 2. Self-Paced Quizzes:

Students completed quizzes at their convenience to revise and test their understanding. 3. Gamified Elements: Leaderboards and timed challenges were used to foster motivation and participation. A post-test comprising 20 multiple-choice questions was conducted at the end of the two weeks to measure knowledge retention. Student engagement and perceptions were assessed through a feedback survey.

Results: About 90% of students participated in the Quizizz quizzes over the two weeks. Gamification elements, such as leaderboards and timed challenges, significantly increased motivation: Post-test results showed that 80% of students achieved scores above 70%, indicating strong retention of general anatomy concepts. Student Feedback:92% of students found Quizizz engaging and effective for learning anatomy.

Conclusion: Quizizz effectively enhanced the learning experience of first-year MBBS students in general anatomy. The gamified approach fostered student engagement and improved knowledge retention, making it a valuable addition to traditional teaching methods. Expanding the use of gamification in other topics of anatomy could further transform medical education.

Keywords: Bachelor of Medicine and Bachelor of Surgery, Enhancement, Gamified elements.

BMSeCON-2024-ANA-1139

Determination of Stature from Skull and Skeletal Measurements by CT Scan Evaluation and Anthropometric Measurements in Kashmiri Population: A Cross-sectional Study

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Introduction: Stature is one of the characteristics that can be used to identify humans, besides age, sex and racial affliction, even many years after death. For this reason, stature estimation represents one of the most important feature in the description of the individual characteristic.

Aim: To obtain the anthropometric length of upper arm, to obtain the distance between opisthion and nasion using Computed Tomography (CT) skull images. Also, to find out the correlation between upper arm length and distance between opisthion and nasion with stature of the individual and to devise linear and multiple regression formulae to estimate stature from these dimensions.

Materials and Methods: This was a hospital-based, cross-sectional study where in patients referred for CT head to the Department of Radiodiagnosis of SMHS Hospital were taken as study group. The present study was conducted on 100 subjects (52 males and 48 females). Two anthropometric measurements i.e. upper arm length and actual height of the patients was measured and CT-based measurements of skull for each patient were recorded. After image acquisition, distance between nasion and opisthion, sagittal sections was recorded for each patient.

Results: All parameters showed significant correlation with height, with upper arm length being the strongest parameter predicting total skeletal height of an individual. Linear regression equation derived for total study population for skull measurement and upper arm length were He=79.39+(4.88×Op-Na)±6.76 and He=41.23+(3.96×UAL)±4.67, respectively. Multiple regression equation for overall population derived was He=42.96+(5.36×UAL)+(14.36×Op-Na)±4.19.

Conclusion: It is concluded that dimensions of upper arm and skull can provide good reliability in estimation of stature. Highest correlation coefficient was found between stature and upper arm length in both males and females, with lowest standard error of estimate.

Keywords: Computed tomography, Estimation of stature, Humerus.

BMSeCON-2024-ANA-1086

Morphological Analysis of the Sacral Hiatus in Lumbosacral Spine Radiographs: A Retrospective Analysis

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Introduction: To achieve a successful caudal epidural block, accurate identification of the sacral hiatus and access to the epidural space are essential. This study aimed to pinpoint specific anatomical landmarks that can facilitate the effective localisation of the sacral hiatus for performing caudal epidural blocks.

Aim: To examine and determine the morphometric features of the sacral hiatus through radiographic analysis.

Materials and Methods: A retrospective morphometric analysis was conducted in the Department of Anatomy in collaboration with Department of Radiodiagnosis, Christian Medical College, Vellore, Tamil Nadu, India between September 2017 to September 2019, where authors analysed a total of 95 radiographs of the lumbosacral spine obtained from the Department of Radiology of the study Institute. Radiographs with evidence of fracture or not showing proper alignment were excluded. Data analysis was conducted using Statistical Package for the Social Sciences (SPSS) software version 21.

Results: The radiographic evaluation revealed that the most common shape of the sacral hiatus was an inverted 'U'-shaped type in males and the inverted 'V'-shaped shaped type in females. The apex of the sacral hiatus was commonly seen at S4 and S3 vertebral levels in males and females, respectively and the base was commonly seen at S5 vertebral levels in both males and females. Furthermore, type A was identified as the most common type of sacral hiatus.

Conclusion: Understanding the morphology and morphometric characteristics of the sacral hiatus can significantly enhance the success rate of caudal epidural blocks. Additionally, knowledge of the morphometry of the posterior sacral foramina may prove beneficial in addressing issues such as urinary and faecal incontinence.

Keywords: Caudal epidural block, Fracture, Sacral foramina.

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Effectiveness of Jigsaw Method as a Learning Method among Medical Students: A Mixed-method Study

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Introduction: Traditional lecture-based teaching methods in medical education often fail to engage students actively, which can hinder deeper understanding and retention of complex concepts. The Jigsaw method, a cooperative learning strategy, enhances student engagement, critical thinking, and collaborative learning.

Aim: To evaluate the effectiveness of Jigsaw method as a learning tool and to explore the perception of students regarding introduction of Jigsaw method in Anatomy.

Materials and Methods: A mixed-method study was conducted involving first MBBS students (N=250) in the Department of Anatomy, Yenepoya Medical College, Mangaluru, Karnataka, India between January 2024 to June 2024. Students were randomly divided into two groups, with one group experiencing typical Small-group Discussions (SGDs) for the first topic and other group exposed to jigsaw approach. The groups were then reversed for second topic. Following the activity, a post-test comprising multiple-choice-questions was conducted to evaluate the impact of jigsaw technique on students' academic performance, with scores from both groups compared by paired t-test. Students' perceptions were collected through validated questionnaire.

Results: This study showed that the knowledge gained in post-test were higher with jigsaw method than that with traditional method. The majority of the students were positive towards the jigsaw method. Qualitative data revealed that students found the method enjoyable and better understanding.

Conclusion: It is evident from this study that the gain in knowledge and information retrieval is better by jigsaw method. Students perceived jigsaw method as a useful and effective learning strategy.

Keywords: Academic performance, Learning strategy, Teaching methods

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Global Trends and Research Impact in Medical Leadership: A Comprehensive Bibliometric Analysis (2001–2024)

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Introduction: Medical Leadership (ML) is increasingly recognised as critical for healthcare innovation, quality, and patient outcomes. However, the evolution of this field and its global research impact remain underexplored. This study conducts a comprehensive bibliometric analysis to identify trends, research impacts, and key developments in medical leadership. The objectives were to analyse publication trends and research impacts in ML research, to evaluate regional contributions and emerging research themes and to provide insights into future research directions in ML.

Aim: To conduct a comprehensive bibliometric analysis to explore global trends, research impact, and thematic developments in ML literature from 2001 to 2024.

Materials and Methods: A comprehensive bibliometric analysis was conducted between September 2024 to October 2024, on data from Scopus database, focussing on publication volume, citation trends, regional contributions, leading authors, journals, and institutions. Social network analysis was used to assess collaboration patterns, while keyword co-occurrence and thematic mapping helped identify emerging research hotspots. A total of 293 articles were accessed for interpretation on Vos Viewer and Biblioshiny tool of analysis.

Results: There is a steady increase in publications and citations. Regional analyses show that the United States, the United Kingdom, and select Asian countries are leading contributors. Key themes include transformational leadership, mentoring, curriculum, empathy and well-being. Collaboration networks indicate strong ties between institutions of high-income countries, while thematic analysis highlights an evolving focus on leadership centred curriculum development and patient-centred leadership.

Conclusion: The ML research has expanded significantly, responding to global healthcare challenges and emphasising interdisciplinary approaches. The findings offer valuable insights for researchers, practitioners, and policymakers aiming to enhance leadership efficacy in healthcare systems.

Keywords: Collaboration pattern, Global research, Healthcare.

BMSeCON-2024-ANA-1015

A Prospective Cohort Study on Circulating Serine Peptidase Inhibitor, Kunitz Type 1 (SPINT1): A Biomarker of Pregnancies

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Introduction: Placental insufficiency and foetal growth restriction significantly contributed to stillbirth risk, particularly in India, where reliable maternal and newborn health statistics were scarce. Hence, the present study was conducted to investigate serum SPINT1 levels as a biomarker for detecting placental insufficiency potentially easing the global burden of preventable stillbirths.

Aim: To assess circulating SPINT1 levels at 28-36 weeks gestation to determine its effectiveness as a biomarker for placental insufficiency.

Materials and Methods: The present prospective cohort study was conducted in Father Muller Medical College, Kankanady, Mangaluru, Karnataka, India, between July 2023 to November 2024.

The study recruited 77 pregnant participants through convenience sampling, following informed consent. Clinical data were collected, and serum SPINT1 levels were measured using Enzyme-linked Immunosorbent Assay (ELISA) during 28-36 weeks of gestation. Postnatal follow-up evaluated neonatal outcomes through Appearance, Pulse, Grimace, Activity and Respiration (APGAR) scores, focussing on cases with foetal complications. Statistical analyses were conducted using GraphPad Prism v9.

Results: The highest serum SPINT1 levels were observed at 28 weeks, with a significant correlation found with gestational age (r=0.54, p=0.004) and systolic blood pressure (r=0.45, p<0.0001). Multiple linear regression identified age, haemoglobin, and blood pressure as significant predictors of SPINT1 levels (p=0.0022). Low APGAR scores were noted in five cases, indicating a link between impaired neonatal outcomes and placental insufficiency.

Conclusion: Serum SPINT1 had the potential to enhance early detection of placental insufficiency, improving management strategies for high-risk pregnancies. Further research was necessary to confirm these findings and explore broader clinical applications.

Keywords: Blood pressure, Haemoglobin, Placental insufficiency.

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Comparative Analysis of Sialochemical Profile of Depressive Individuals under Antidepressant Therapy: A Cross-sectional Ex-vivo Study

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Introduction: Depression is a common but serious mental disorder that occurs as a persistent feeling of sadness and loss of interest, the prevalence of which may be as high as 30%. Autonomic nervous system affected by depressive disorder can modify the salivary secretion, altered the salivary flow and its composition and risk of developing salivary gland hypofunction. Anti-depressants are the drugs which can elevate mood in depressive disorders, could also have potential to alter salivary secretion rate and their composition. Alteration in salivary composition may produce numerous sequelae like altered taste and nutrition deficiency, oral microbial population shifts, high dental caries risk, and oral mucosal changes. Sialochemistry is an important diagnostic and research tool that provides qualitative information on salivary gland hypofunction.

Aim: To assess and compare sialochemical alteration in unstimulated whole saliva of normal individuals (Group I), depressive patients not under medication (Group II) and depressive patients under selective serotonin reuptake inhibitors two-month course (Group III).

Materials and Methods: A present cross-sectional ex-vivo study was conducted in the Department of Psychiatry, Mahatma Gandhi Medical College and Research Institute and Department of Oral and Maxillofacial Pathology and Oral Microbiology, Indira Gandhi Institute of Dental Sciences, Puducherry, India from May 2016 to April 2017 on a total 80 subjects- Group I (40 controls), Group II (40-depressive individuals) and Group III (same depressive individuals after two-month course of antidepressant therapy). Depression level was assessed with Hospital Anxiety and Depression Scale (HADS) under the guidance of psychiatrist. Informed consent were obtained from research participants. Whole unstimulated saliva was collected and subjected to sialochemical analysis (sodium, potassium, chloride, total protein, urea, salivary a amylase, calcium, and pH).

Results: The parameters were statistically analysed using Independent t-test to compare groups I and II; and groups I and III; and paired t-test to compare groups II and III. Result showing statistically significant alteration in parameters such as total protein, salivary α-amylase, chloride, and calcium.

Conclusion: Regular sialochemical monitoring and prophylactic interventional therapy may be helpful in restoring oral health status of depressive individuals.

Keywords: Antidepressants, Autonomic nervous system, Nutrition deficiency

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Comparison of Nasal Index among Young Individuals in a Private Dental Hospital at Puducherry, India

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Introduction: Nasal index exhibits sexual differences and it has become a useful tool in Forensic Science. Nasal index is related to regional and climatic differences. Various studies have indicated racial and ethnic differences in nasal index amongst different populations. The present study was designed to provide baseline data of certain nasal anthropometric measurements for male and female students studying at the study Institute, to determine the sexual difference and a normative data of nasal index and to classify their nose type according to Martin and Sallar (1957).

Aim: To determine the nasal index of male and female undergraduate students; to compare the nasal index of male and female undergraduate students and to provide a database of nasal index, nose type of students of Indira Gandhi Institute of Dental Sciences.

Materials and Methods: This study was conducted at the Department of Oral and Maxillofacial Pathology and Oral Microbiology, Indira Gandhi Institute of Dental Sciences, Sri Balaji Vidyapeeth University, Puducherry, India, between August 2023 to August 2024. Nasal height and width for 174 students were measured using a sliding digital Vernier calliper scale. The measurements were calculated by using the nasal index formula and compared between the male and female population, and were categorised under the classification given by Martin and Sallar (1957).

Results:

Gender	Mean index	Standard deviation
Male	69.03843	9.07783
Female	66.10562	8.309706

Statistically significant

Mean difference=2.932

p value=0.028

Male

Nasal index type	Male	Female
Hyperleptorrhine	6%	13%
Leptorrhine	48%	49%
Mesorrhine	44%	38%
Platyrrhine	2%	--

Conclusion: This study provided a database and a future reference for anthropometric study. It also provided a strong suggestion to commercialise the nasal index for gender differentiation among humans and to identify from different species.

Keywords: Anthropometric measurements, Forensic science, Nose type

BMSeCON-2024-ANA-1069

Morphometric Study of Body the of Lumbar Vertebrae- An MRI Study

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Introduction: A typical vertebra has a ventral body; a dorsal vertebral (neural) arch, extended by lever-like processes; and a vertebral foramen, which is occupied in life by the spinal cord, meninges, and vessels. Fibrocartilage intervertebral discs connect opposing surfaces of neighboring bodies.

Objective: To study the morphometric parameters of the body of lumbar vertebrae using Magnetic Resonance Imaging (MRI) and to correlate the morphometric parameters of the body of lumbar vertebrae with the patient's age.

Materials and Methods: This study was conducted on 50 patients aged 30 to 70 years in the Department of Anatomy, D Y Patil Medical College in collaboration with the Radiology Department of D Y Patil Hospital, Nerul, Navi Mumbai. Morphometric parameters of 1-5 lumbar vertebrae were recorded with MRI.

Results: The mean value and standard deviation of the antero-posterior diameter of the body of lumbar vertebrae were 25.37±4.15 mm, 26.9±3.047 mm, 27.71±2.94 mm, 28.36±3.04 mm and 28.888±3.82 mm at L1-L5 vertebrae, respectively. The mean value and standard deviation of the transverse diameter of the body of lumbar vertebrae are 34.605±5.752 mm, 37.49±5.7.8, 41.04±40842, 43.093±4.48 mm, and 44.168±7.407 mm at L1-L5 vertebrae respectively. The mean value and standard deviation of vertical diameter of the body of lumbar vertebrae are 19.469±2.97 mm, 21.496±3.314 mm, 21.75±3.249 mm, 21.68±3.272 mm, and 22.053±3.366 mm at L1-L5 vertebrae respectively.

Conclusion: This study revealed a significant correlation between the body of lumbar vertebrae and the patient's age.

Keywords: Antero-posterior, Magnetic resonance imaging, Transverse, Vertical.

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Dermatoglyphic and its Association with Oral Cancer

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Introduction: Dermatoglyphics is a study of the epidermal ridges and their configurations on the fingertips, palms, soles, toes and it is genetically determined and are not influenced by environment or age factors. Hence, dermatoglyphics can be efficiently employed with other clinical signs as a noninvasive, simple and inexpensive screening procedure for genetically predisposed diseases.

Aim: To observe and analyse the occurrence of specific dermatoglyphic patterns in the oral cancer patients and compare with healthy subjects.

Materials and Methods: Study comprised 100 subjects including two groups (50 oral cancer and 50 healthy subjects). Subjects diagnosed with oral cancer and aged between 18 and 80 years were selected for the study. Subjects with injuries on the hand were excluded. Demographic details of subjects were collected. The finger prints were obtained by the Canon LIDE 400 scanner. The right and left hands were placed separately on the glass surface of the scanner which was connected to the laptop. The finger print patterns such as arches, loops and whorls were analysed.

Results: The present study showed a predominance of loop patterns in both hands of both groups followed by whorls and arches. When an association was analysed between arch, loop and whorl among the study and control groups, no statistically significant association was observed in the left hand, while the right hand showed a statistically significant association.

Conclusion: Dermatoglyphics can be used as a screening method to identify individuals who are genetically susceptible to develop oral cancers.

Keywords: Dermatoglyphics, Epidermal ridges, Finger prints

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"Dens in Dente", a Developmental Anomaly of the Normal Tooth Architecture: A Case Report

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Introduction: Dens invaginatus, also known as dens in dente, is a rare anomaly affecting human dentition especially the maxillary lateral incisors. The condition results in invagination of an amelodental structure within the pulp.

Case description: Patient came with the complaint of missing upper front teeth for past three months with no gross facial asymmetry. Radiographically a radiopaque mass of size 1×10.7 cm obstructing the normal erupting path of 21 was noticed.

Discussion: The "dens in dente" is a developmental change, which arises as a result of an invagination in the surface of tooth crown before calcification has occurred. Various causes of this condition have been proposed among which an increased localised external pressure, focal growth retardation and focal growth stimulation in certain areas of the tooth bud is the most common. The permanent maxillary lateral incisors are among the teeth most frequently involved, and appears to be simple accentuation in the development of the lingual pit. Literature states that the condition is fairly common and the term "dens in dente" originally applied to a severe invagination that gave the appearance of the tooth within a tooth, is actually a misnomer.

Conclusion: Good knowledge on the anatomy and further investigation would prevent caries, pulp infection and premature loss of the tooth. The condition need to be recognised early which need to be prophylactically restored.

Keywords: Accentuation, Focal growth, Rare anomaly

BMSeCON-2024-BMR-4016

Anatomical Changes in Maxillary Antrum Secondary to Aggressive Intrusion of the Odontogenic Cyst

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Introduction: This study examines aggressive odontogenic cysts affecting the maxillary antrum, focussing on their origins, classification, anatomical impacts, and management. Odontogenic cysts, common in the maxillofacial region, arise from tooth development and are classified as developmental or inflammatory. Aggressive types, such as odontogenic keratocysts, exhibit rapid growth, recurrence, and significant damage to adjacent structures, particularly the maxillary sinus. The sinus's proximity to maxillary tooth roots makes it vulnerable, leading to complications like bone thinning, perforation, sinus dysfunction and facial deformities.

Case Description: A 30-year-old female patient presented with an aggressive odontogenic cyst invading the left maxillary sinus with symptoms of swelling, nasal obstruction and loosening of teeth. Radiolucency revealed with sinus opacification and histopathology confirmed an epithelial-lined odontogenic cyst. Treatment involved surgical intervention, such as enucleation and reconstruction, coupled with adjuvant therapies like decompression.

Discussion: The present case with complex challenges in maxillofacial pathology due to their potential to disrupt vital anatomical structures and compromise functionality. This case underscores the importance of a multidisciplinary approach in managing aggressive odontogenic cysts.

Conclusion: Aggressive odontogenic cysts in the maxillary antrum demand a multidisciplinary approach. Early diagnosis through clinical, radiographic, and histopathological evaluation is critical to effective management, preventing complications such as extensive bone destruction and sinus dysfunction.

Keywords: Aggressive cyst, Bone thinning, Odontogenic keratocyst, Sinus dysfunction

BMSeCON-2024-PHY-3035

Subacute Exposure to Gaseous Pollutants from Diesel Engine Exhaust Attenuates Capsaicin-induced Cardio-pulmonary Reflex Responses involving Oxidant Stress Mechanisms in Rats

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Introduction: Intravenous injection of capsaicin produces vagal-mediated protective Cardio-pulmonary (CP) reflexes manifesting as tachypnoea, bradycardia, and triphasic Blood Pressure (BP) response in anaesthetised rats. Particulate matter from diesel engine exhaust have been reported to attenuate these reflexes. However, the effects of gaseous constituents of diesel exhaust are not known.

Aim: The present study is designed to investigate the effects of gaseous pollutants in diesel exhaust, on capsaicin-induced CP reflexes in rat model.

Materials and Methods: Adult male rats were randomly assigned to three groups, Non-exposed (NE) group, Filtered Diesel Exhaust-exposed (FDE) group and N-acetyl Cysteine (NAC)-treated FDE group. FDE group of rats (n=6) were exposed to filtered diesel exhaust for five hours a day for five days (D1 - D5), and were taken for dissection on day 6 (D6), while NE group of rats (n=6) remained unexposed. On D6, rats were anaesthetised, following which jugular vein was cannulated for injection of chemicals, and femoral artery was cannulated to record the BP. Lead II electrocardiogram and respiratory movements were also recorded.

Results: Intravenous injection of capsaicin (0.1 mL; 10 µg/kg) produced immediate tachypnoeic, hyperventilatory, hypotensive, and bradycardiac responses in both NE and FDE groups of rats. However, these capsaicin-induced CP responses were significantly attenuated in FDE group as compared to the NE group of rats. Further, FDE-induced attenuation of capsaicin-evoked CP responses were diminished in the N-acetyl cysteine-treated FDE rats.

Conclusion: Oxidant stress mechanisms could possibly be involved in inhibition of CP reflexes by gaseous pollutants in diesel engine exhaust.

Keywords: Air pollution, Cardio pulomonary reflexes, Diesel exhaust

BMSeCON-2024-PHY-3038

Influence of Heath-Carter's Somatotypes on Nerve Conduction, Muscle Strength and Serum Lipoprotein Level among Adult Male Badminton Players with Normal Body Mass Index

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Introduction: Somatotype classification using the Heath-Carter's method examines body composition's role in athletic performance and health. While Bosy Mass Index (BMI) is often used to gauge fitness, it overlooks critical factors like fat distribution and musculoskeletal efficiency. This study addresses these gaps, providing insights into physical and metabolic health.

Aim: This study evaluates how somatotypes—endomorph, mesomorph, and ectomorph—affect nerve conduction, muscle strength, and serum lipoprotein levels in male adult badminton players with normal BMI.

Materials and Methods: This observational study involves 60 male badminton players aged 30-40 years in Madurai, with BMI between 18.5-22.9 kg/m^2 and regular badminton practice (>150 minutes per week). Players with co-morbidities or conditions affecting lipid or musculoskeletal systems were excluded. Data collection included Somatotype classification i.e., Heath-Carter's method, Nerve Conduction Studies (NCV) i.e., Median, radial, and ulnar nerves using Neurostim apparatus, and Muscle strength i.e., Handgrip dynamometer and serum High-density Lipoprotein (HDL) levels as a cardiovascular health marker. Statistical analysis will use Statistical Package for the Social Sciences (SPSS) with Pearson's correlation and p-values <0.05.

Results: The results found correlations between somatotypes and NCV, muscle strength, and HDL levels. Mesomorphic dominance was hypothesised to show superior nerve and muscle performance.

Conclusion: The study highlights somatotype-based differences in health and performance, addressing the inadequacy of BMI as a sole fitness indicator. Findings may guide recreational athletes toward optimised fitness and cardiovascular health.

Keywords: Atheletic performance, Badminton practice, Neurostim apparatus

BMSeCON-2024-PHY-3110

Association of Parkinsonism with Herbicides, Pesticides and Insecticides: A Systematic Review and Meta-analysis

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Introduction: Pesticide exposure had been considered a major environmental risk factor for Parkinson's Disease (PD). Despite structure diversity, pesticides were seldom evaluated individually.

Aims: To assess the association between specific pesticides and PD through systematic review and meta-analysis.

Materials and Methods: Names of insecticides, pesticides, herbicides, fumigants, and terms related to PD were used as the keywords for PubMed and Embase search. No language restrictions were set. Cohort or case-control studies comparing PD incidence between specific pesticides and the non exposure group were included for data extraction. Study quality was assessed by Newcastle-Ottawa scale. Meta-analysis was performed by Review Manager (Rev Man).

Results: Ten studies, including two cohort studies and eight case-control studies, with median to high study quality and fulfilling the predetermined inclusion and exclusion criteria were analysed. Eighteen specific pesticides were evaluated. Eight pesticides, namely aldrin, dieldrin, malathion, parathion, chlorpyrifos, phorate, permethrin, and 2,4-D, were identified to be significantly associated with PD.

Conclusion: Research has identified several pesticides that are particularly harmful, including organophosphates and organochlorines, which have been linked to elevated PD risk. Interestingly, paraquat and maneb, two pesticides commonly used for PD animal models, were not significantly associated with PD. More studies on the mechanisms of the pesticides are needed to elucidate their association with PD will be warranted in future.

Keywords: Organophosphates and organochlorines, Parkinson's disease, Pesticide exposure

BMSeCON-2024-PHY-3001

Rethinking Physiology Curriculum: Student and Faculty Insights

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Introduction: A curriculum is a standards based sequence of planned experiences where students practice and achieve ability in content and applied learning skills. While, the National Medical Commission (NMC) introduced competency based medical education in 2019, understanding student and faculty beliefs about the proposed physiology curriculum remains essential.

Aim: To gain insights into faculty and student perceptions of the Physiology curriculum, this study collected responses from individuals across India.

Materials and Methods: This cross-sectional study, conducted using a Google form questionnaire, collected responses from 564 students and 139 faculty members across India from November 2023 to October 2024, following Institutional Ethical Committee approval. To minimise bias towards the Physiology curriculum, junior residents, first year MBBS students, and MBBS graduates with over a year of experience were not included. Following face validity checks, the questionnaire was distributed through WhatsApp groups using snowball sampling. Results were presented as frequencies and percentages.

Results: A total of 84 (60.4%) faculty members recommended, and 419 (74.3%) students preferred to consult online study materials, with YouTube being the most popular choice. A total of 116 (83.5%) faculty members delivered lectures using PowerPoint and white/black boards, a method preferred by 405 (71.8%) students. Seventy-nine (56.8%) faculty members taught in both regional and English languages, which aligned with the preferences of 425 (75.4%) students. Most students and faculty members agreed on the benefits of early clinical exposure, self-directed learning, small group discussions, and integrated teaching. While, most students and faculty members found human/clinical and haematology laboratory experiments relevant, perceptions were mixed regarding amphibian laboratory experiments. Only one-third of students and faculty reported that modern physiology experiments used in clinics nowadays were demonstrated in their colleges.

Conclusion: The study underscores a clear preference for online resources, particularly YouTube, among both students and faculty for Physiology education. While traditional teaching methods like PowerPoint and white/black boards remain valuable, there is a

compelling need to incorporate more modern, clinically relevant experiments into the Physiology curriculum. Aligning the curriculum with these emerging trends can enhance student engagement, understanding, and preparation for medical practice.

Keywords: Onlince resources, Perceptions, Student enagagement

BMSeCON 2024-PHY-3015

Comparative Study of Biochemical Parameters and Stress Scores between AFLD and NAFLD Patients

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Introduction: Stress is a type of perceived strain that can be felt by either stimulating or intimidating but depending on the appraisal, it can be either premeditated or adaptive. Long-term stress causes an elevation of cortisol levels, which may be the reason behind increased cholesterol levels. Mental stress is commonly associated with anxiety, depression, and some disease conditions including cancer and cardiovascular disease. Elevations of Aspartate Transaminase (AST) levels and Alanine Transaminase (ALT) are accompanied by hypercholesterolaemia, hypertriglyceridaemia, and in some cases, hyperbilirubinaemia is also noticed.

Aim: To compare the biochemical parameters and stress scores between Alcoholic Fatty Liver Disease (AFLD) and Non Alcoholic Fatty Liver Disease (NAFLD).

Materials and Methods: The study included 78 AFLD and 54 NAFLD patients from a tertiary care hospital (Yenepoya Medical College, Deralakatte, Mangaluru, Karnataka, India). Biochemical parameters were analysed in the hospital laboratory, and stress was examined by asking for answers to the validated stress analysis questionnaire.

Results: The AFLD patients fall under moderate stress score levels while, NAFLD falls under higher perceived stress score levels. AST and ALT were seen to increase in both AFLD and NAFLD.

Conclusion: Lifestyle changes are the first line of treatment in both AFLD and NAFLD. The detection of fatty liver progression in the early stage of NAFLD and stress management may help to prevent the further development of the disease into a fatal life-threatening stage.

Keywords: Alcoholic Fatty Liver Disease (AFLD), Mental stress, Non Alcoholic Fatty Liver Disease (NAFLD)

BMSeCON-2024-PHY-3013

Comparative Study of the Influence of Regular Breathing Exercises on Blood Pressure in Young Individuals

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Introduction: Non communicable diseases are the major contributors for the deaths in India while, the deaths due to Cardiovascular Diseases (CVDs) play as the major contributors in this. Hypertension (HTN) is associated with almost all cardiovascular morbidities and mortalities. Various studies which were done focussing on the middle-aged individuals and older individuals have already proven the beneficial effect of breathing exercises in normalising Blood Pressure (BP) but similar studies focussing on young individuals are very few.

Aim: To establish a relationship between regular breathing exercises and BP phenotypes in young individuals.

Materials and Methods: This cross-sectional study was performed with age and gender-matched young individuals where two groups were formed. Group-1 included the participants who were not doing any form of breathing exercises and group-2 included the participants doing regular breathing exercises. The comprehensive sampling method was done. The Body Mass Index (BMI), BP phenotypes, and Pulse Rate (PR) of all the individuals were measured after obtaining informed voluntary written consent post-obtaining approval from the institutional committees. We continued including participants in our study till it were equal in both the groups.

Results: There was significant (p-value <0.05) higher values of BMI and BP phenotypes in group 1 as compared to group 2. Also, there was a positive correlation of BMI with BP phenotypes.

Conclusion: The study concluded that there was a beneficial effect of regular breathing exercises in keeping the blood pressure in normal range in young individuals.

Keywords: Cardiovascular diseases, Hypertension, Morbidity

BMSeCON-2024-PHY-3011

The Effects of Yoga on Sleep, Cognitive Function, and Stress in MBBS Students

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Introduction: Yoga, an ancient practice rooted in physical postures, breath control, and mindfulness, has emerged as a holistic approach to fostering physical, mental, and emotional balance. Studies have shown that regular yoga practice can improve sleep quality, enhance cognitive function, and reduce stress levels by promoting relaxation and increasing mental clarity.

Aim: To explore, how regular yoga practice can impact sleep quality, sleep duration, and cognitive function in first year MBBS students, with a focus on whether yoga helps reduce stress and enhance focus during the challenging transition into medical school.

Materials and Methods: This observational study was conducted at Sree Mookambika Institute of Medical Sciences, Tamil Nadu, India with 100 enthusiastic first year MBBS students who volunteered to participate. A four-week structured yoga programme, practiced three times a week, was introduced to all participants. Assessments were performed before the programme began and again after its completion to capture changes in key parameters. Sleep quality and duration- evaluated using the Pittsburgh Sleep Quality Index (PSQI). Cognitive function: assessed through memory recall tasks, the Stroop test, and the digit span test. Perceived stress- measured

using a modified Perceived Stress Scale (PSS), tailored to the unique experiences of first-year MBBS students.

Results: All 100 students completed the four-week structured yoga programme. Comparisons between pre-yoga assessments and post-yoga assessments was done. Sleep quality showed that students experienced a noticeable improvement, with average PSQI scores improving from 6.5 before yoga to 5.7 after yoga. Sleep duration showed that participants reported sleeping longer, with average durations increasing from 6.1 hours to 6.9 hours per night. Memory recall showed that students showed better performance in memory recall tasks, with scores rising from an average of 4.6 words to 5.1 words. Cognitive function showed that Stroop test reaction times decreased from an average of 35.8 to 34.2 seconds, indicating sharper mental focus and attention. Stress levels showed that students reported feeling more at ease, with average PSS scores dropping from 17.6 to 15.1, reflecting reduced stress.

Conclusion: Regular yoga practice was associated with better sleep quality, enhanced cognitive function, and reduced stress levels in first year MBBS students. The findings suggested that integrating yoga into a wellness routine can be a valuable support for new medical students.

Keywords: Bachelor of Medicine and Bachelor of Surgery, modified Perceived Stress Scale, Sleep quality

BMSeCON-2024-PHY-3049

Psychosocial Barriers and Challenges among Stroke Patients from Diagnosis to Rehabilitation: A Qualitative Study

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Introduction: Stroke is a leading cause of disability, with survivors often facing physical, emotional, and cognitive impairments. Despite advances in acute care, psychosocial challenges like distress, social isolation, and identity issues remain underexplored. These barriers hinder recovery and quality of life, highlighting the need for comprehensive rehabilitation approaches. By understanding these challenges, the study seeks to provide insights into the broader dimensions of stroke recovery and identify key areas where healthcare interventions could be improved to support the emotional, social, and psychological well-being of stroke patients.

Aim: 1. To identify the emotional and psychological barriers faced by stroke patients during their recovery process. To evaluate the role of caregivers in the recovery process and the challenges they face, and to highlight gaps in the healthcare system that may exacerbate psychosocial challenges for stroke patients.

Materials and Methods: A qualitative research design was employed, utilising semi-structured interviews and focus group discussions to gather in-depth insights from stroke survivors, their caregivers, and healthcare providers. Participants were recruited from a tertiary health care hospital with specialised stroke care services. A purposive sampling method was used to ensure a diverse range of participants in terms of age, gender, stroke severity, and time post-stroke. Data were collected over a period of six months, and thematic analysis was used to identify and analyses recurring patterns and themes related to psychosocial barriers and challenges.

Results: Stroke survivors and caregivers face challenges that hinder rehabilitation. Emotional distress, including anxiety and depression, limits recovery. Social isolation from mobility issues, stigma, and communication barriers affects both groups. Altered self-identity and low self-esteem further impede progress. Communication impairments like aphasia reduce participation in social and therapeutic activities. Systemic issues such as limited rehabilitation access, long wait times, and poor care coordination leave patients feeling unsupported, especially post-discharge. Addressing these barriers is crucial to improving outcomes.

Conclusion: The study highlights the substantial psychosocial barriers that stroke patients face from diagnosis through rehabilitation, which significantly impact their recovery process. Emotional distress, social isolation, communication difficulties, and lack of healthcare support are prominent challenges that need to be addressed in stroke care. A more integrated, patient-centre approach to stroke rehabilitation is essential, one that includes psychological support, social reintegration programs, and improved caregiver training and support.

Keywords: Cognitive rehablitation, Peychoscocial factors, Stroke

BMSeCON-2024-PHY-3016

Effect of Intermittent Fasting on Cognitive Skills

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Introduction: Intermittent Fasting (IF) is an eating plan that switches between fasting and eating on a regular schedule, has been shown to induce metabolic changes such as increased insulin sensitivity and ketone body utilisation. No intake of calories including caffeine (tea or coffee) for the specified time period is mandated thus only drinking of water is allowed.

Aim: To investigate the impact of intermittent fasting on cognitive skills on young adults.

Materials and Methods: The interventional study included 30 participants and were instructed to follow the 14:10 fasting protocol for three weeks. Data were collected using a NIMHANS Revised B4ECT ReCoDe questionnaire assessing the auditory verbal learning and memory, orientation, subjective cognition and visual retention at the start and at end of fasting. The questionnaire was administered every day for three weeks.

Results: Preliminary findings suggest that the IF showed significant improvements in the four assessments (the auditory verbal learning and memory, orientation, subjective cognition and visual retention). These results suggest that IF may positively influence cognitive skills.

Conclusion: The study provides preliminary evidence that IF can enhance cognitive skills, particularly auditory verbal learning and memory and subjective cognition. Further research is needed to confirm these findings and explore the underlying mechanisms.

Keywords: Cognition, Auditory verbal learning, Young adults

BMSeCON-2024-PHY-3024

Effect of Facial Exercises on Facial Wrinkles and their Correlation with Facial Fat Infiltration in Middle aged People in India: An Interventional Comparative Study

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Introduction: Indian cosmetics alone spend an approximate of 10 billion rupees for manufacturing and marketing. Ageing is the natural process of growing senescent, and it is a complex phenomenon which affects individuals at almost various levels including physical, psychological, social, and biological. Facial wrinkles are the natural result of ageing. The skin naturally becomes less elastic and drier, with less collagen in the deeper layers as people age. This process results in the lines and creases which are typical of wrinkling. Wrinkling is more common in people with white skin. The main target of the facial exercises is to improve facial flexibility, reduce wrinkles, and promote a more young appearance.

Aim: To determine the effect of facial exercises on facial wrinkles and assess the relationship between the parameters of facial fat infiltration and facial wrinkles.

Materials and Methods: An interventional, comparative study was performed included women with normal Body Mass Index (BMI) aged between 40 to 65 years without any comorbidities at Velammal Medical College Hospital and Research Institute, Madurai, Tamil Nadu, India for a total duration of 3 months. SPSS software along with unpaired t-test was used for statistical analysis.

1) The relationship between facial fat infiltration was assessed using an ultrasonogram at 13 Mhz at the forehead. The participants in the study group were instructed to perform facial exercise daily for 30 minutes and the changes in facial wrinkles after 8 weeks were monitored by trained evaluators according to our 6 grade photographic evaluation criteria for fixed wrinkles.

Results: The data was entered into MS Excel. The mean and standard deviation was found and those values were used to calculate the p-value which was 0.001 making it statistically significant. There was a significant decrease in fat infiltration after the intervention of facial exercise and also a significant correlation with facial wrinkles according to the 6 point photographic scale.

Conclusion: This study will help to acknowledge the relationship between facial fat infiltration and facial wrinkle formation seen in patients. This data can also be used for as a factor for age determination under forensic purposes.

Keywords: Ageing, Facial flexibility, Wrinkling

BMSeCON-2024-PHY-3037

Impact of Breathing Exercises on Exhaled Nitric Oxide Levels in Bronchial Asthma Patients: An Interventional Study

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Introduction: Bronchial asthma is a chronic respiratory disease characterised by airway inflammation, hyper-responsiveness, and recurrent episodes of wheezing, coughing, chest tightness, and shortness of breath. Exhaled Nitric Oxide (eNO) is a non-invasive marker of airway inflammation. Breathing exercises have been shown to improve lung function and reduce symptoms in asthma patients.

Aim: To evaluate the impact of breathing exercises on eNO levels in bronchial asthma patients.

Materials and Methods: This interventional study examines the effect of breathing exercises on eNO levels in 40 bronchial asthma patients (ages 18-60 years), divided into an intervention group (n=20) and a control group (n=20). The intervention group performed a 30-minute daily breathing exercise routine for three weeks, consisting of diaphragmatic breathing, pursed lip breathing, box breathing, 4-7-8 breathing, and Bhastrika pranayama. The control group received standard asthma care. The eNO levels were measured at baseline and after three weeks in both groups, and results were statistically analysed using the unpaired t-test in SPSS software.

Results: There was statistically significant decrease (p-value <0.05) in eNO levels in Intervention Group compared to Control Group.

Conclusion: Breathing exercises significantly reduce airway inflammation in patients with bronchial asthma, as evidenced by a substantial decrease in exhaled nitric oxide levels.

Keywords: Airway inflammation, Breathing exercises, Chest tightness, Chronic respiratory disease

BMSeCON-PHY-3023

Effect of Upper Limb vs Lower Limb Exercise vs Combined Exercise on Pulmonary Function in Bicycle Ergometer among Young Adults with Central Obesity: An Interventional Study

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Introduction: In the face of rising global obesity rates, central obesity has emerged as one of the major health concerns, particularly among young adults. It has profound implications on respiratory health and has been linked to decreased pulmonary function. By examining these exercise strategies, the study aims to provide valuable insights into tailored exercise interventions that could enhance pulmonary health in a population at high risk for central obesity.

Aim: To determine the effect of upper limb vs lower limb vs combined exercise on pulmonary function in bicycle ergometer among young adults with central obesity.

Materials and Methods: This is a cross over interventional study involving 30 subjects. The waist circumference, hip circumference and waist hip ratio were measured to assess central obesity. The same subjects perform upper limb, lower limb and combined exercise, each seven days apart which are taken as Group A,B,C respectively. FEV1, FVC, FEV1% and peak expiratory flow rate of the subjects were measured using computerised spirometer and then analysed statistically using Analysis of Variance (ANOVA).

Results: After 30 minutes of exercise, subjects who performed combined exercise (p-value <0.001) had shown significant improvement over subjects who performed only upper limb exercise, (p-value <0.020) or lower limb exercise (p-value <0.076).

Conclusion: Both upper and lower limb exercise should be incorporated to effectively improve pulmonary function among young adults with central obesity.

Keywords: Forced vital capacity, Pulmonary function tests, Waist circumference

BMSeCON-2024-BIO-2008

Evaluation of Biochemical Parameters in Agricultural Farm Workers Exposed to Pesticides: A Cross-sectional Study

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Introduction: Exposure of humans to pesticides like organophosphates and carbamates for longer duration may lead to alteration in Acetylcholinesterase (AChE) levels, typically used as biomarker of chronic exposure.

Aim: To estimate cholinesterase levels to assess severity of pesticide exposure and to correlate them with other biochemical parameters.

Materials and Methods: This cross-sectional study included 230 cases of agricultural farm workers who were exposed to pesticides for more than one year and were categorised into two groups based on cholinesterase levels. Group A - with normal cholinesterase levels and Group B - with low cholinesterase levels. Venous blood samples were collected to analyse plasma glucose, lipid profile, urea, creatinine and cholinesterase levels. Statistical software used was Statistical Package for the Social Sciences (SPSS) version 20.

Results: There was significant alteration in lipid profile and creatinine levels in the study group with decreased cholinesterase levels when compared to those with normal cholinesterase levels. Cholinesterase levels showed significant negative correlation with non-HDL cholesterol (p-value <0.001) and total cholesterol/HDL ratio (p-value <0.034) and positive correlation with fasting plasma glucose levels (p-value <0.009). Although the plasma glucose levels fall within the intolerance range, the observed increase in glucose was significant. But diabetes has to be confirmed by doing Oral Glucose Tolerance Tests (OGTT). Renal parameters were in the upper reference ranges which were inconclusive of renal damage and need to be supported by more sensitive markers.

Conclusion: The above results confirm that pesticide exposure affects lipid and glucose metabolism implicating future risk of cardiovascular disease, diabetes and impending renal damage.

Keywords: Acetyl cholinesterase, Carbamates, Organophosphates

BMSeCON-2024-BIO-2009

Mastering the Art of MCQs: Improving MCQ Quality through Medical Faculty Training

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Introduction: Multiple Choice Questions (MCQs) have become an integral component of both internal assessments and university examinations in the field of medical education. MCQs crafted by medical faculty are occasionally found to lack the precision required in terms of technical accuracy and content relevance.

Aim: To assess the quality of MCQs framed by medical faculty and to study the effectiveness of a training programme in improving the quality of MCQs.

Materials and Methods: The study was conducted in Department of Medical Education, East Point College of Medical Sciences and Research Centre, Bengaluru, Karnataka, India. Thirty faculty from all specialties were selected and asked to frame MCQs in their subject. Following this, a workshop addressing good practices in framing MCQs was conducted and participants reframed MCQs based on knowledge gained during workshop, which were evaluated using a checklist. Pre and post workshop scores were compared. Perception of faculty towards the workshop was taken on the Likert scale.

Results: Pre and post training, Mean±Standard Deviation (SD) were 17.2±3.2 and 22.9±2.5 respectively. On applying paired t-test, a statistical significance was seen (p-value <0.001). Thematic analysis of responses for open ended question was done using three themes. All aspects of workshop were strongly agreed by more than 50% of faculty on the Likert scale.

Conclusion: The study strongly proposes frequent workshops on do's and dont's of framing MCQs for all teaching faculty in Medical Colleges.

Keywords: Likert score, Multiple choice questions, Pre and post test

BMSeCON-2024-BIO-2046

Evaluation of Gastroprotective and Anticolitis Effect of Wheatgrass Extract in Albino Wistar Rats

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Introduction: An imbalance between aggressive and protective factors in the gastric mucosa leads to Gastric Ulcers (GU) and Ulcerative Colitis (UC), causing painful inflammation in the gastrointestinal tract. The UC causes 15,000 deaths annually. Synthetic treatments like aminosalicylates and prostaglandins protect mucosal tissues but are limited by relapses and side effects. Phytochemicals and dietary antioxidants, known for their Reactive Oxygen Species (ROS) scavenging activity, show promise in ulcer protection.

Aim: To analyse the phytochemical composition, antioxidant capacity, and acute toxicity of wheatgrass ethanolic extract and to evaluate the gastroprotective effects of wheatgrass extract on ethanol-induced gastric ulcers, focussing on antioxidant potential, biochemical parameters and histopathology.

Materials and Methods: Fresh wheatgrass was collected and authenticated. Albino rats were used, with no mortality observed up to a dose of 2000 mg/kg. Doses of 200 mg/kg and 400 mg/kg were selected for the study.

Results: Phytochemical screening confirmed wheatgrass contains alkaloids, flavonoids, proteins, saponins, glycosides, Vitamin C, and phenols. Ethanol-induced gastric ulceration in albino Wistar rats led to increased Malondialdehyde (MDA) levels in stomach tissue. After ethanol administration, gastric MDA and Myeloperoxidase (MPO) levels were significantly higher (p-value <0.05), while Glutathione (GSH), Catalase (CAT) and Total Antioxidant Capacity (TAC) levels were significantly lower (p-value <0.05) compared to controls. Treatment with wheatgrass extract reduced MDA levels and increased GSH and CAT, demonstrating its antioxidant activity and gastroprotective effects against ethanol-induced ulcers.

Conclusion: Antioxidant properties of phytochemicals in wheatgrass demonstrated its strong free radical scavenging potential. The study found that wheatgrass extract protects mucous membranes from ethanol-induced damage.

Keywords: Antioxidants, Oxidant stress, Phytochemical screening, Wheatgrass ethanolic extract

BMSeCON-2024-BIO-2066

Dyslipidaemia in Type 2 Diabetes Mellitus: A Cross-sectional Study

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Introduction: In type 2 diabetes mellitus, lipid abnormalities are very common and is associated with increased risk of cardiovascular diseases.

Aim: To find the association of type 2 diabetes and dyslipidaemia.

Materials and Methods: This cross-sectional study was conducted at the Medicity Institute of Medical Sciences, Hyderabad, Telangana, India. All the necessary data of patient with type 2 diabetes in the period between December 2013 and May 2016 were studied.

Results: Out of 60 patients with type 2 diabetes, 30 were Diabetic Male (DM) and 30 were Diabetic Female (DF). Approximately 50% DM and 46.6% DF had high levels of total cholesterol. Moreover, elevated levels of low-density lipoprotein were observed in 36.6%

and 60% in male and female. Elevated triglyceride levels were noted in 63.3% and 43.3% male and female patients, respectively, while 70% and 90% of male and female patients had low high density lipoprotein levels. Cholesterol showed significant correlation with triglyceride (r: 0.387, p-value <0.05).

Conclusion: Diabetes is associated with a high incidence of dyslipidaemia with elevated level of low-density lipoprotein, total cholesterol, triglyceride and low high-density cholesterol.

Keywords: Cardiovascular disease, Lipid abnormalities, Lipid profile

BMSeCON-2024-BIO-2069

Serum Irisin as a Marker of Insulin Resistance, Glycaemic Control and Cardiac Risk in Type 2 Diabetes Mellitus: A Cross-sectional Study

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Introduction: Type 2 Diabetes Mellitus (T2DM) is a chronic disease characterised by hyperglycaemia and insulin resistance. Irisin, an exercise-induced myokine, has been implicated in energy metabolism, insulin sensitivity, and lipid regulation. Its role as a potential biomarker for T2DM and metabolic syndrome, particularly among Indians, remains underexplored.

Aim: To compare serum irisin levels between T2DM patients and euglycaemic controls. Additionally, it evaluated the association of irisin with insulin resistance, glycaemic parameters, and components of metabolic syndrome, along with its potential to predict cardiovascular risk in T2DM.

Materials and Methods: A cross-sectional study was conducted at Vydehi Institute of Medical Sciences and Research Centre, Bengaluru, Karnataka, India, enrolling 40 T2DM patients and 40 age-matched and sex-matched euglycaemic controls. Anthropometric parameters, Fasting Plasma Glucose (FPG), Glycated Haemoglobin (HbA1c), lipid profile, and serum irisin levels were measured. Insulin resistance was assessed using the Homeostatic Model Assessment (HOMA-IR). Serum irisin was quantified using Enzyme-linked Immunosorbent Assay (ELISA).

Results: Serum irisin levels were significantly lower in T2DM patients compared to controls (T2DM: 45.3±12.7 ng/mL vs. controls: 60.8±10.2 ng/mL, p-value <0.001). Negative correlations were observed between irisin and FPG (r=-0.48, p-value <0.01), HbA1c (r=-0.41, p-value <0.01), and HOMA-IR (r=-0.52, p-value <0.01). Positive associations were found with High-density Lipoprotein (HDL) cholesterol (r=0.35, p-value <0.05), and negative associations with triglycerides (r=-0.37, p-value <0.05).

Conclusion: Reduced irisin levels are significantly linked to insulin resistance and poor glycaemic control in T2DM, highlighting its potential as a biomarker for metabolic dysfunction and cardiovascular risk in Indians.

Keywords: Euglycaemic, Glycaemic parameters, Insulin sensitivity

BMSeCON-2024-BIO-2120

A Prospective Study on Association of Serum Vitamin D and Serum Ferritin in Females Diagnosed with Primary Hypothyroidism

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Introduction: Vitamin D and thyroid hormones share similar type of nuclear receptors and hence Vitamin D may influence actions of thyroid hormones. Also, Vitamin D being an immune modulater with suppression of autoimmunity, its deficiency is suggested to play a role in autoimmune thyroid disorder. Serum ferritin, an index of iron stores may affect the production of thyroid hormones through the iron containing enzyme Thyroid Peroxidase (TPO) needed for its synthesis.

Aim: To study the association of serum Vitamin D and serum ferritin with thyroid hormones in hypothyroid females. Also, to correlate serum Vitamin D and serum ferritin with Thyroid Stimulating Hormone (TSH).

Materials and Methods: This prospective cross-sectional study involves a total of 170 female subjects aged 20-50 years, with 85 cases diagnosed with primary hypothyroidism and 85 age matched healthy subjects as controls. Serum ferritin, Vitamin D, Free

Triiodothyronine (FT3), Free Thyroxine (FT4), TSH were measured with chemiluminescence Clinical Laboratory Improvement Amendments (CLIA), Siemens fully autoanalyser. Results were subjected to statistical evaluation and presented as mean±Standard Deviation (SD). P-value ≤0.05 was considered as statistically significant.

Results: The mean value of TSH of hypothyroid females were found to be higher [16.24±13.96 µIU/mL] than that of control group [2.08±0.38 µIU/mL]. The mean±SD of serum ferritin in the study group and the control group was 9.95±4.36 ng/mL and 149.35±103.16 ng/mL, respectively. The mean±SD of serum Vitamin D in the study group and the control group was (16.84±8.2 ng/mL) and (30.04±7.33 ng/mL), respectively. A significant negative correlation was found between TSH and serum ferritin and TSH and Vitamin D (r=-0.71) in hypothyroid patients.

Conclusion: The present study showed that the hypothyroid subjects had significantly lower serum Vitamin D and ferritin concentration than healthy controls. Therefore, measurement and maintaining serum ferritin and Vitamin D in primary hypothyroid subjects would not only be beneficial in the prognosis, but also prevent further complications.

Keywords: Clinical laboratory improvement amendments, Thyroid peroxidase, Thyroid stimulating hormone

BMSeCON-2024-BIO-2015

HALP Score in Assessing the Severity of COVID-19

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Introduction: The Coronavirus Disease 2019 (COVID-19) is caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) and has emerged as a global concern during March 2020. The pandemic, which affected approximately 613,972,905 people, has caused 6,516,982 deaths since its onset. SARS-CoV-2 mainly spreads through respiratory droplets and close contact. Hospitalisation is required in 20% of infected patients. Mortality and morbidity are increased in persons with co-morbidities. Since many markers have been used for assessing the severity of COVID-19, the (Hemoglobin, Albumin, Lymphocyte, and Platelet (HALP) score is a scoring system initially developed to evaluate the patient prognosis in various diseases, like cancer and infections, and may help assess the severity of COVID–19. The HALP is an easily calculated scoring system that reflects nutritional and systemic inflammatory status.

Aim: The study was undertaken to evaluate the extent of inflammation, which could be used manage the patients based on the degree of inflammation.

Materials and Methods: The study was conducted at a tertiary care teaching hospital in Chennai. The study population included 456 patients with COVID-19, confirmed by the reverse transcription-Polymerase Chain Reaction (PCR) of nasopharyngeal swabs for SARS-CoV-2. Data were collected from the patient files in the Medical Records Department. The study population was divided into three groups as mild, moderate and severe based on the peripheral oxygen saturation and respiratory rate. Mild, moderate and severe cases had an oxygen saturation of ≥94, 91-93 and ≤90%, respectively and respiratory rates of ≤23, 24-29 and ≥30 breaths/min, respectively. A Computed Tomography (CT) scan of the chest was also used for grading the patients. According to Bernheim et al., the degree of involvement of each lobe of the lungs was assessed and classified as none, minimal, mild, moderate and severe with the involvement of 0 (score 0), 1-25% (score 1), 26-50% (score 2), 51-75% (score 3) and 76-100% (score 4) of lobe involvement, respectively. The study was approved by the institutional ethics committee. HALP score was calculated. Data were expressed based on the normality of distribution.

Results: The obtained data showed that the HALP score was inversely related to the severity of COVID-19, which was statistically significant with a p-value <0.05.

Conclusion: Thus, the HALP score is useful in assessing the magnitude of COVID-19 infection and hence, the morbidity and mortality.

Keywords: Coronavirus disease 2019, Nasopharyngeal swab, Severe acute respiratory syndrome coronavirus 2

BMSeCON-2024-BIO-2028

Aggregate Index of Systemic Inflammation: A Novel Predictor of Diabetic Nephropathy in Type 2 Diabetes Mellitus: A Cross-sectional Study

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Introduction: Diabetic Nephropathy (DN) is important health problem in world wide adult population. Aggregate Index of Systemic Inflammation (AISI) is an indicator for the comprehensive assessment of systemic inflammatory state through the White Blood Cells (WBCs). Thus it is significant to implement various strategies for early detection of DN because of an early biomarker means early diagnosis.

Aim: To assess whether AISI can predict diabetic nephropathy in type 2 Diabetes Mellitus (DM) patients.

Materials and Methods: This cross-sectional study was done in Clinical Biochemistry Laboratory at Saveetha Medical College, Tamil Nadu, India. The study involved 50 normal , 50 Diabetic and 50 DN patients from health camp and Outpatient Department (OPD). We measured their height, weight, Waist Circumference (WC) and Blood Pressure (BP). Patients with Type 1 diabetes, Diabetic Ketoacidosis (DKA), lactic acidosis, autoimmune diseases, malignant tumours, and Urinary Tract Infection (UTI) nephritis were excluded.

Results: AISI is significantly high in DN compared to type 2 DM and healthy control. In Multiple Logistic Regression (MLR), AISI and estimated Glomerular Filtration Rate (eGFR) were significantly associated with DN. In the Receiver Operating Characteristic (ROC) curve, the maximum Area Under the Curve (AUC) represented AISI.

Conclusion: AISI could be used as a novel biomarker to predict DN in type 2 DM. A simple and inexpensive marker can be used as a screening tool for type 2 DM patients to predict DN.

Keywords: Diabetic ketoacidosis, Urinary tract infection, Weight circumference

BMSeCON-2024-BIO-2030

Reduced eGFR Cystatin C as an Independent Risk Factor for Cardiovascular Disease among Hypertensive Patients with Normal eGFR Creatinine: A Cross-sectional Study

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Introduction: High Blood Pressure (BP) ranks as the third most substantial risk factor contributing to the burden of disease in the world. According to the "rule of halves," half of individuals with high BP are undiagnosed (rule 1), half of those diagnosed are untreated (rule 2), and half of those receiving treatment have uncontrolled hypertension (rule 3). Compared to creatinine-based Chronic Kidney Disease Epidemiology Collaboration estimated Glomerular Filtration Rate (CKD-EPI eGFR), cystatin C based CKD-EPI eGFR equation serve as an earlier and more reliable predictor of unfavourable cardiovascular outcomes. This strategy would allow individuals to be reclassified into lower-risk groups, in terms of adverse cardiovascular events. However, the benefits of using CKD-EPI eGFR cystatin C instead of CKD-EPI eGFR creatinine have not been well established within the hypertensive population. So, in this study, authors tried to test the hypothesis that serum CKD-EPI eGFR cystatin C levels might be an independent risk factor for CVD in patients with hypertension with apparently normal CKD-EPI eGFR creatinine measurements.

Aim: To compare the systolic and diastolic BP with CKD-EPI eGFR cystatin C and CKD-EPI eGFR creatinine.To identify those at high risk for developing Cardiovascular Diseases (CVDs) among the hypertensive population.

Materials and Methods: This cross-sectional study was conducted between March 2024 and April 2024. Comprehensive details regarding the study were provided to the participants, and informed consent was acquired in written form. Both males and females with history of hypertension who were on treatment between the age group 30-50 years were enrolled in the study. Individuals diagnosed with diabetes mellitus, renal failure, cardiac diseases, thyroid disorder, seizures, any autoimmune disorder, and on steroids were excluded. CKD-EPI eGFR creatinine and Creatinine Clearance (CC) are calculated using the eGFR calculator recommended by the National Kidney Foundation (NKF). Non-probability convenience sampling technique was opted. Total 102 hypertensive patients were involved according to the inclusion and exclusion criteria. The programme Statistical Package for the Social Sciences (SPSS) (version 26.0; SPSS Inc., USA) was used for all data analysis. The mean±standard deviation was used to represent continuously distributed and normally distributed variables. A statistically significant result was defined as a p-value of less than 0.05. Receiver Operating Characteristic (ROC) analysis was done to find the cut-off points of CKD-EPI eGFR creatinine and CKD-EPI eGFR cystatin-C to predict the cardiovascular risk.

Results: In this study, hypertensive population and reclassified 31% of the patients had the significantly higher risk of CVD when compared to creatinine base CKD- EPI eGFR ($p<0.05$).

Conclusion: One strength of this study was the combined use of creatinine and cystatin C eGFR to estimate the risk of CVS outcomes. The results suggest that the combined formula could better assess the overall cardiovascular risk than the cystatin C-alone equation. On the contrary, all-cause mortality was more accurately predicted using the cystatin C-based equation. The results also highlight the benefits of detecting occult CKD using CKD-EPI eGFR equation based on cystatin C in hypertensive patients with normal eGFR creatinine and therefore better for assessing the risk of cardiovascular events.

Keywords: Clearance, Cystatin c, National kidney foundation

BMSeCON-2024-BMR-4000

Vitamin D Status and Awareness about the Sunshine Vitamin among Undergraduate Medical Students

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Introduction: Vitamin D, derived from Ultraviolet (UV) exposure, offers numerous health benefits, including cancer prevention, autoimmune disorders, cardiovascular disease prevention, and musculoskeletal health and homeostasis. Deficiency of Vitamin D is a hidden epidemic in modern times, largely due to lack of understanding and information. Among medical students, staying indoors for long hours like classes, library, Intensive Care Units (ICUs), untimely meals, and use of sunscreen makes them prone to deficiency.

Aim: To assess the levels of Vitamin D in healthy medical students in the age group of 18-25 years and awareness regarding Vitamin D in medical students.

Materials and Methods: A cross-sectional study was conducted on 50 healthy medical students, both males and females, aged 18-25 years after taking informed consent. Serum Vitamin D levels was assessed using chemiluminescence immunoassay. The questionnaire evaluates an individual's Vitamin D status and their knowledge and perception of its health benefits and prevention. Statistical analysis was done using Statistical Package for the Social Sciences (SPSS) version 19.

Results: Serum Vitamin D levels ranged from 16.01 to 31.12 ng/dL, with 78% having low levels, 11% insufficient, and 2% having sufficient levels. The study found that 66% of students have developed suntans in the past 12 months, 42% use sunscreen, and 60% have less than 30 minutes of sun exposure. Most consume milk daily, with only 20% taking multivitamins. Medical students have a good understanding of Vitamin D sources, synthesis sites, serum calcium levels, and sun exposure. However, only 40% know about health benefits, recommended daily allowances, common symptoms, and high-risk groups. They also have limited knowledge about Vitamin D status in India, serum levels, and treatment methods.

Conclusion: Medical students, due to their unique professional circumstances, lack awareness about health benefits, risk factors, and preventive measures for hypovitaminosis. Their serum Vitamin D levels are deficient, indicating a lack of awareness. Regular monitoring and awareness about sun exposure time can improve vitamin D levels, benefiting both students' health and future medical professionals' knowledge and community benefit.

Keywords: Chemiluminescence immunoassay, Ultraviolet rays exposure, Vitamin D synthesis

BMSeCON-2024-BIO-2000

Serum CA-125 Levels in Early Miscarriages and Healthy Pregnancy: A Case-control Comparative Study

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Introduction: Early miscarriage is defined as pregnancy loss before 20 weeks of gestation or foetus weighing less than 500 gms before the age of viability. About half of losses are due to chromosomal anomalies, thyroid disorders, uterine anomalies etc. Rest of the pregnancy loss cause remains unclear and unknown and gets unnoticed.

Aim: To estimate and compare the serum Cancer Antigen (CA)-125 levels in women having early miscarriages and healthy pregnancy.

Materials and Methods: This case-control comparative study done at Department of Obstetrics and Gynaecology, S. Nijalingappa Medical College and H.S.K Hospital and Research Centre, Bagalkot, Karnataka, India, involving cases of 25 women who had early miscarriages without reason and 25 healthy control pregnant women controls of same gestation. Serum CA-125 level in both cases and controls was estimated by Chemiluminescence Immunoassay (CLIA) methodology.

Results: Serum CA-125 level in cases was 60.12±41.12 IU/mL and in controls was 14.5±4.99 IU/mL, which showed highly significant (p-value <0.001) raised levels in cases compared to controls.

Conclusion: Serum CA-125 levels were significantly high in miscarriage cases compared to healthy controls .This finding could be helpful for identifying high risk cases and also CA-125 could be used as future marker or predicator of early miscarriage and its application in antenatal check up.

Keywords: Antenatal checkup, Chemilumonescence immunoassay, Chromosome anomalies

BMSeCON-2024-BIO-2025

Prevalence of Microalbuminuria among Diabetic Patients in a Tertiary Care Hospital: A Cross-sectional Study

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Introduction: Diabetes Mellitus (DM) is a growing global health concern, contributing to significant morbidity and mortality. One of the earliest markers of diabetic nephropathy is microalbuminuria, which serves as a predictor of progressive renal dysfunction and cardiovascular risk. Early detection of microalbuminuria can facilitate timely intervention, potentially slowing the progression of kidney damage in diabetic patients.

Aim: To determine the prevalence of microalbuminuria among diabetic patients in a tertiary care hospital and to identify associated demographic and clinical factors.

Materials and Methods: This cross-sectional study was conducted at a tertiary care hospital over a 6-month period. A total of 300 diabetic patients aged 18 years and above were included through systematic random sampling. Patients with urinary tract infections, known chronic kidney disease, or on nephrotoxic drugs were excluded. Detailed demographic and clinical data, including age, duration of diabetes, Glycated Haemoglobin (HbA1c) levels, and presence of hypertension or other co-morbidities, were collected. Microalbuminuria was assessed using a standardised Urine Albumin-to-Creatinine Ratio (UACR) measurement, with values between 30 and 300 mg/g indicating microalbuminuria. Statistical analysis was performed using Statistical Package for the Social Sciences (SPSS) software, with Chi-square and logistic regression tests applied to determine associations.

Results: The prevalence of microalbuminuria in the study population was found to be 32.7% (n=98). Patients with poor glycaemic control (HbA1c ≥7%) showed a significantly higher prevalence of microalbuminuria (p-value <0.01). Additionally, a longer duration of diabetes and the presence of hypertension were significantly associated with microalbuminuria (p-value <0.05). No significant associations were observed with gender or age.

Conclusion: The study reveals a high prevalence of microalbuminuria among diabetic patients, underscoring the need for routine screening and early management strategies to prevent the progression of diabetic nephropathy. Poor glycaemic control and hypertension were notable risk factors, emphasising the importance of comprehensive diabetes management. These findings highlight the critical role of early detection and preventive care in mitigating renal and cardiovascular complications in diabetic patients.

Keywords: Glycated haemoglobin, Nephrotoxic drugs, Urine albumin-to-creatinine ratio

BMSeCON-2024-BIO-2053

Effect of NGAL in the Diagnosis of Nephropathy in Type 2 Diabetes Mellitus

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Introduction: Diabetic Nephropathy (DN) is one of the most frequent complications of Diabetes Mellitus (DM). It is diagnosed by the presence of persistently increased albuminuria. However, DN may progress without significant albuminuria. A promising biomarker Neutrophil Gelatinase Associated Lipocalin (NGAL) has a role in the detection of DN.

Aim: To compare and correlate NGAL with albuminuria and other kidney function tests in diagnosing nephropathy in Type 2 DM.

Materials and Methods: A cross-sectional study was conducted among 180 subjects grouped into non diabetic healthy controls, diabetes without nephropathy and with nephropathy. Blood samples

were collected and analysed for kidney function tests and urine samples for albuminuria and NGAL. Detection of albuminuria by immunoturbidimetric assay and NGAL by Enzyme-linked Immunosorbent Assay (ELISA) technique.

Results: In diabetic groups the mean±Standard Deviation (SD) of NGAL (122.28±96.777 ng/mL) were significantly higher than those in non diabetic group (47.18±30.729 ng/mL). Nephropathy patients with macroalbuminuria have the highest level of NGAL (235.23±106.38 ng/mL) (p-value <0.001) and has statically significant correlation with albuminuria (r-value=0.72).

Conclusion: The study showed a significant relationship between urinary NGAL and progressive stages of nephropathy in patients with T2DM. Hence, NGAL could be considered as a marker for early detection of nephropathy in T2DM patients.

Keywords: Diabetic nephropathy, Microalbuminuria, Neutrophil Gelatinase Associated Lipocalin (NGAL)

BMSECON-2024-BIO-2063

Evaluation of the Diagnostic Significance of Lactate Dehydrogenase and Uric Acid in Preeclampsia

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Introduction: Preeclampsia (PE) is a progressive, multisystem pregnancy disorder that leads to gestational related morbidity and mortality. Early detection and prevention of preeclampsia could help in saving mother and baby during labour.

Aim: To evaluate the diagnostic significance of Lactate Dehydrogenase (LDH) and uric acid as biomarkers in preeclampsia.

Materials and Methods: The present study was conducted in the Department of Obstetrics and Gynaecology, Jubilee Mission Medical College and Research Institute, Thrissur, Kerala, India. The study comprised 60 samples of which 30 cases were preeclampsia and 30 normal pregnant women. From each research participant, 5 mL of venous blood was collected in the vacutainers and LDH and uric acid were measured using enzymatic method, and the data were analysed.

Results: The LDH levels and uric acid levels were significantly higher in the preeclampsia group when compared to controls (p<0.05).

Conclusion: The LDH levels and uric acid levels were significantly higher in preeclampsia cases compared to the control group. The LDH and uric acid level estimation can serve as biomarkers in preeclampsia which could help in the planning and treatment of preeclampsia to prevent life-threating illness.

Keywords: Gestational related mortality, Preeclampsia biomarkers, Pregnancy disorder

BMSeCON-2024-BIO-2024

Association of Urinary Albumin-Creatinine Ratio with Glycemic Status and Lipid Profile: A Retrospective Cross-sectional Study

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Introduction: Diabetic nephropathy is a serious complication of Type 2 Diabetes Mellitus (T2DM). Dyslipidaemia, a complication of diabetes, can exacerbate kidney damage through atherosclerosis, while impaired kidney function may disrupt lipid metabolism suggesting a bidirectional relationship.

Aim: To evaluate the association between lipid profile parameters, Urine Albumin-Creatinine Ratio (UACR), and Glycated Haemoglobin (HbA1c) in patients with T2DM.

Materials and Methods: A total of 300 patients aged above 18 years with T2DM, were included in the study. Patients with severe cardiovascular, renal, liver diseases and using lipid-altering medications were excluded from the study. We divided the participants into 3 groups based on UACR: <30 mg/g (53%), 30-300 mg/g (41.67%), and >300 mg/g (5.33%). Patients' data were collected from Hospital Information System (HIS) and analysed following approval from ethics committee. (IHEC Number-24/341).

Results: Among 300 participants, 202 (67.3%) were males and 98 (32.7%) females. HbA1c levels significantly differed between Groups 1 and 2 (p-value <0.001), but no significant differences were found in lipid profiles.

Conclusion: This study demonstrated a significant relationship between UACR and HbA1c, highlighting the importance of glycaemic control in preventing diabetic nephropathy.

Keywords: Diabetic nephropathy, Dyslipidaemia, Lipid-altering medications

BMSeCON-2024-BIO-2044

Influence of Serum Ferritin on Altered Lipid Profile Causing Atherosclerosis in Haemodialysis Patients

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Introduction: Chronic renal failure was a major risk for cardiovascular disease worldwide. Anaemic haemodialysis patients require iron supplementation This study explores the overload of ferritin can contribute to oxidative stress, a condition closely related to the lipid peroxidation, which may predispose haemodialysis patients to atherosclerosis.

Aim: To determine the relationship between the serum ferritin and lipid profile in chronic renal failure patients on haemodialysis.

Materials and Methods: Based on the KDIGO2017 guidelines, this study included chronic kidney disease patients on haemodialysis in the age group of 40-70 years of both sexes from the Department of Biochemistry, Saveetha Medical College and Hospital, Chennai, Tamil Nadu, India. Patients with pre-existing liver and cardiac disease were excluded from the study. Study was divided into two groups, Group 1 included healthy controls (n=50), Group 2 included Chronic Kidney Disease (CKD) patients who undergone haemodialysis (n=40). Relevant medical history, blood pressure, and blood samples were collected from the time of enrollment by a trained clinician. Collected blood samples were immediately processed for serum ferritin and lipid profile by Vitros ECI and Vitros -250 dry chemistry analyser.

Results: There was a significant change (p-value <0.05) observed in ferritin. There was no significant change (p-value >0.05) observed in total cholesterol between healthy controls and CKD patients with haemodialysis. No significant change (p-value <0.05) was observed in Low-density Lipoprotein cholesterol (LDL-c) and Very Low-density Lipoprotein (VLDL) levels, while significant change was observed in triglyceride (p-value <0.05) between CKD patients with haemodialysis and controls.

Conclusion: Patients with CKD who are receiving haemodialysis, elevated serum ferritin levels cause lipid peroxidation and oxidative stress, which change lipoprotein metabolism. Its lead to risk of developing atherosclerosis.

Keywords: Atherosclerosis, Chronic renal failure, Oxidative stress

BMSeCON-2024-BIO-2047

DHEAS and Cortisol as Predictive Markers for Stillbirth: A Case-control Study

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Introduction: Stillbirths constitute a major part of perinatal deaths. According to the recent data, the global stillbirth rate is 13.9 stillbirths per 1,000 total births. The internationally comparable definition of stillbirth according to the World Health Organisation (WHO) is a baby born with no signs of life at or after 28 weeks of gestation. Stillbirth presents in two forms-prenatal and the other intrapartum. An early stillbirth is a foetal death occurring between 20 and 27 weeks of gestation. A late stillbirth occurs between 28 and 36 weeks of gestation. A term stillbirth is the one occurring between 37 or more completed weeks of gestation. Causes of major portion of stillbirth is unknown, because there are number of risk factors directly and indirectly leading to stillbirth. Although prior research has assessed the risk factors of stillbirth, but the knowledge about a definitive biochemical marker for predicting stillbirth is lacking.

Aim: To evaluate and compare the levels of neuroendocrine markers Dehydroepiandrosterone-sulphate (DHEA-S) and cortisol in women experiencing stillbirth and in those experiencing live birth.

Materials and Methods: This prospective case-control study was conducted in the Department of Biochemistry in association with Department of Gynaecology of ESIC Medical College and Hospital, Faridabad, India, by taking 25 singleton pregnancies presenting with stillbirth as cases and 25 singleton pregnancies presenting with livebirth as controls. Serum DHEAS and cortisol was analysed by Enzyme-linked Immunosorbent Assay (ELISA). The data obtained are presented as mean±Standard Deviation (SD) values. The significance of the mean difference between groups was estimated by Students' t-test. Relationships among parameters were determined by correlation analyses. P-value less than 0.05 was considered statistically significant.

Results: Women with stillbirths showed significantly elevated levels of cortisol and DHEA-S compared to the control group. The mean DHEAS level was 2.74±0.48 µmol/L and cortisol level was 223.58±46.21 µmol/L in cases compared to DHEAS (0.98±0.45 µmol/L) and cortisol (63.83±26.20 ng/mL) in controls. The results were statistically significant with p-value <0.05.

Conclusion: This comprehensive study reveals significant increase in the levels of DHEAS and cortisol in patients who had stillborn babies compared to patients who had live babies. These findings suggest that specific biomarkers could potentially serve as indicators in understanding and managing pregnancy outcomes. The findings underscore the potential impact of altered neuroendocrine hormones on pregnancy outcome, emphasising the need for appropriate screening for neuroendocrine hormone levels (DHEAS and cortisol) in high risk pregnancies.

Keywords: Neuroendocrine markers, Singleton pregnancy, Stillborn

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Assessing the Relationship between Vitamin D Status and ICU Duration in Varied Demographics

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Introduction: Vitamin D primarily known for its role in bone health, has been increasingly recognised for its broader impact on overall health and immune function. In critically ill patients, Vitamin D deficiency has been associated with adverse outcomes, including prolonged Intensive Care Unit (ICU) stays and increased mortality.

Aim and Objectives: To measure Vitamin D levels in patients admitted to ICU and to determine the correlation between Vitamin D levels and ICU stay duration. To identify significant differences in ICU stay based on Vitamin D.

Materials and Methods: A total of 148 patients aged between 22 and 80 years admitted into ICU are identified in the Department of General Medicine at Osmania General Hospital, Hyderabad, India. Relevant medical history, blood samples were collected time of enrolment. Patient samples were used to estimate Vitamin D levels. Correlation and regression analysis along with Chi-square analysis were done after dividing them into three groups (Group A with normal vitamin D levels of 20-50 ng/mL, Group B with Vitamin D deficient, Group C- Vitamin D insufficiency).

Results: Out of 148, 113 were deficient, 27 were insufficient and seven were normal in terms of Vitamin D levels. Correlation analysis for each group showed a moderate negative correlation of (-0.52, -0.58, -0.61) with p-value <0.001 for all three groups. The chi-square statistic was 10.23 and p-value <0.001. Regression analysis showed the regression coefficient to be -0.5 (p-value <0.001) keeping age and gender constant. Logistic regression analysis gave the odds ratio of 0.86 for Vitamin D and duration of stay. The ANOVA between 3 groups gave a F-value=37.63 (p-value <0.001).

Conclusion: The findings suggested that maintaining adequate Vitamin D levels could be crucial for improving outcomes. Integrating Vitamin D assessment into routine ICU care could pave the way for better patient management and recovery.

Keywords: Bone health, Intensive care unit stay, Vitamin D

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Association of Urinary Podocalyxin and Serum Magnesium with Clinical Parameters of Nephropathy in Patients with Type 2 Diabetes Mellitus

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Introduction: Magnesium (Mg) has a vital role in the human body, and involved in many important metabolic processes, but also has antioxidant, anti-inflammatory, and antiapoptotic effects. Mg deficiency leads to impaired glucose tolerance, insulin resistance, abnormal lipid metabolism and oxidative stress in patients with Type 2 Diabetes Mellitus (T2DM). Urinary podocalyxin originates

in the podocyte apical surface, occurring in vesicle form. In T2DM patients, the podocalyxin level presented higher levels in patients with microalbuminuria than in patients with normoalbuminuria. Interestingly, elevated levels of urinary podocalyxin might be a useful biomarker for detecting early podocyte injury in T2DM patients.

Aim and objectives: To measure and compare serum Mg and urinary podocalyxin levels in T2DM patients with normo, micro and macroalbuminuria and compare them with age, gender and Body Mass Index (BMI) matched controls. and to correlate serum Mg and urinary podocalyxin with microalbumin and estimated Glomerular Filtration Rate (eGFR) for early detection of nephropathy in patients with T2DM.

Materials and Methods: It is a case control study with 120 T2DM patients with normo, (ACR <30 mg/g) micro (30-300 mg/g) and macro albuminuria (>300 mg/g) and also 40 healthy controls. The routine biochemical, clinical, serum Mg concentrations were measured by laboratory standard methods. The urinary podocalyxin was determined by Enzyme Linked Immunosorbent Assay (ELISA) method.

Results: The urinary podocalyxin significantly increased in T2DM with normal, microalbumin and macroalbuminuria and also, we observed serum Mg concentrations were drastically decreased in T2DM with normal, microalbumin and macroalbuminuria than healthy controls (p-value=0.001). Additionally, significant increased urinary podocalyxin and decreased serum Mg concentrations associated with renal functional damage and DN (p-value=0.001). Furthermore, the serum Mg concentrations negatively correlated with microalbumin and positively correlated with eGFR (p-value=0.001). The urinary podocalyxin concentrations positively correlated with micro albumin and negatively correlated with eGFR (p-value=0.001) The Receiver Operating Characteristic (ROC) curve analysis also showed that the urinary podocalyxin and serum Mg were highly significant under Area Under the Curve (AUC) than microalbumin and eGFR (p-value=0.001).

Conclusion: Based on the study findings, the urinary podocalyxin serve as an early predictable and prognostic marker for nephropathy in patients with T2DM.

Keywords: Diabetic nephropathy, Early podocyte injury, Macroalbuminuria