

Telemedicon 2024 Abstracts

Virtual Healthcare and the Role of AI

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Abstract

It is with great enthusiasm that we present the abstracts from TELEMEDICON 2024, the 20th International Conference of the Telemedicine Society of India, organised by the Department of Telemedicine, Postgraduate Institute of Medical Education and Research (PGIMER), Chandigarh

This year's conference, themed "Virtual Healthcare and the Role of AI" reflects the dynamic and evolving role of technology in reshaping healthcare delivery worldwide.

The abstracts compiled here span diverse domains such as artificial intelligence, virtual care platforms, remote monitoring technologies, and the ethical dimensions of digital health innovation.

We are immensely grateful to the authors for their valuable contribution. We hope these abstracts will inspire meaningful dialogue, foster interdisciplinary collaborations, and ignite ideas that will shape the future of digital health.

With warm regards,

Scientific Committee, TELEMEDICON 2024

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OR-1

Revolutionising Home Healthcare: Smartphone-Based Video-Electroencephalography for Neurological Disorders

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Aim: Despite the established advantages of home-based long-term electroencephalography (EEG) monitoring,

with studies demonstrating a 72% sensitivity compared to only 11% for routine EEGs in detecting abnormalities (Hernandez-Ronquillo et al., 2023; Beckerman et al., 2013), there is no availability of home-based monitoring in India. This study evaluated the feasibility and effectiveness of a novel smartphone-based video EEG system for conducting home EEG procedures in India.

Methods: Twenty patients were referred for home EEG monitoring by neurologists in Bengaluru (Bangalore), India. Qualified EEG technologists performed the setup, including electrode placement at patients' homes. They also remotely monitored EEG quality during the procedure and collected data upon completion. A qualified epileptologist remotely reviewed and interpreted the EEG data and provided the final diagnosis and recommendations.

Results: The smartphone-based system proved highly feasible, with patients successfully undergoing procedures in the comfort of their homes. The system's user-friendliness and convenience reduced the need for frequent in-clinic visits. Key benefits of home EEG monitoring include improved access to neurological care, early detection of seizures or other neurological events, and reduced healthcare costs.

Conclusion: These results highlight the potential of smartphone-based video EEG systems to revolutionise neurological care in India by enhancing patient outcomes and improving efficiency.

OR-2

Advancing Telepathology: Experience From a Tertiary Care Centre of Excellence

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Aim: To assess the implementation of telepathology services at the Postgraduate Institute of Medical Education and Research (PGIMER) Centre of Excellence for Telepathology, Department of Telemedicine, launched on November 1st, 2023. This study outlines the methodology, case diversity, platforms used, and the impact on diagnostic efficiency and accessibility.

Methodology: Telepathology services are delivered through three platforms: email submissions, the Government of India eSanjeevani portal, and Onward Assist Telereporting system, a private enterprise specialising in telepathology and artificial intelligence solutions. These services, offered free during a 1-year trial period, receive cases from Punjab, Haryana, Himachal Pradesh, and New Delhi. Referring pathologists submit photomicrographs and videos along with detailed requisition forms. A telepathology (TP) number is assigned after verifying image quality. The targeted turnaround time is 24 to 48 h post-assignment of the TP number. A digital report is generated for each case.

Results: A total of 380 telepathology consultations have been conducted, with 285 cases (75%) from private hospitals and 95 cases (25%) from government institutions. The subspecialties covered include ocular pathology (102/380), head and neck pathology (56/380), dermatopathology

(55/380), gastrointestinal pathology (41/380), gynaepathology (21/380), pulmonary pathology (16/380), neuropathology (13/380), musculoskeletal pathology (12/380) genitourinary pathology (10/380), breast pathology (10/380), cytopathology (33/380), and others. There were 12 cases initially deemed unsatisfactory due to poor image quality but were later reported upon receiving better images. Comprehensive diagnoses were rendered in 90% (340) of cases, while 10% (40) required descriptive reports due to insufficient diagnostic material or inadequate information.

Conclusion: Telepathology is a transformative tool in digital pathology, enabling expert opinions across wide geographic regions, reducing turnaround time, and facilitating remote teaching and training. It significantly enhances diagnostic accuracy, improves clinical management, and contributes to better healthcare outcomes.

OR-3

Overcoming Barriers in Digital Healthcare: A Case Study on Promoting Telemedicine Awareness and Adoption in Rural Karnataka Through eSanjeevani

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Aim: This case study examines the potential of telemedicine, particularly the eSanjeevani platform, in addressing healthcare accessibility challenges in rural Karnataka, India. Telemedicine facilitates remote consultations, yet adoption in rural areas faces hurdles including limited infrastructure, low digital literacy, and sociocultural resistance. To identify barriers to the implementation of digital healthcare in rural areas. To evaluate the effectiveness of telemedicine solutions, particularly the eSanjeevani platform and strategies, for instilling awareness and for improvement of digital healthcare access and utilisation in underserved regions.

Methods: Between April and July 2023, data were gathered from 273 participants and 1,330 households in two rural Karnataka villages. Statistical analysis and structured questionnaires assessed participants' awareness, willingness, and preferred communication methods for eSanjeevani use. Findings revealed that 97.8% of rural residents

were unaware of eSanjeevani, though 56% expressed willingness to adopt the platform. Video consultations were favoured by 73.8% of participants, while 22.8% preferred audio calls, and 17.6% opted for chatting.

Results: Adoption was influenced by demographics, infrastructure, and socio-economic factors. For instance, younger age groups and salaried individuals showed higher willingness to use telemedicine, while usage barriers were prevalent among below-poverty-line ration cardholders and specific occupational groups. Women (47.2%) were more willing to use eSanjeevani than men (40.5%), and government hospitals were the preferred healthcare providers.

Conclusion: Despite challenges, government initiatives like the Ayushman Bharat Digital Mission and platforms like eSanjeevani hold promise for overcoming barriers. With improved infrastructure, digital literacy programmes, and community trust-building, telemedicine could transform healthcare access in rural areas. Continued support, targeted interventions, and community engagement are critical for sustainable digital healthcare adoption in underserved regions.

OR-4

Optimising Paediatric Skincare in Underserved Areas Through Teledermatology

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Aim: Paediatric teledermatology (PTD) offers a potential solution for delivering specialised dermatological care to children in remote and resource-limited areas. This study aimed to evaluate the scope, receptivity, and factors influencing the optimisation of PTD practice in the context of a developing country's demographics.

Methods: Over 6 months, this prospective study analysed 961 PTD consultations conducted in underserved areas of North India via an assisted telemedicine platform, eSanjeevani 2.0. Data were gathered cross-sectionally through standardised forms, complemented by a retrospective survey to capture the perceptions of referring healthcare providers (RHPs). Patient clinic-demographics were noted, and various consultation characteristics were assessed for their impact on clinical decision-making. All data were anonymised, and the study received approval from the institution's ethics committee.

Results: Among the 961 cases studied (median age 5 years, 52.1% female), the majority consisted of infections, infestations, and dermatitis; 1.35% of cases were acute/emergency dermatoses managed empirically, and only 4.47% required referral. The Friedman test revealed highly significant differences in perceived helpfulness among the four consultation variables ($p < 0.001$), with AI image quality being the most helpful, followed by audiovisual/text interaction, multiple images, and past medical/family history, with Wilcoxon Signed Ranks tests indicating significant differences in perceived helpfulness between each pair of variables ($p < 0.001$). The Regional Healthcare Partnership survey revealed strong endorsement of the process and a high perceived parent/guardian satisfaction rate (4.47 ± 0.87 on a 5-point scale).

Conclusion: The findings support the use of real-time PTD to manage less complex, non-procedural cases, reduce in-person consultations, and improve access to paediatric dermatology care in resource-constrained settings. High-quality images and effective audiovisual communication are pivotal for its optimisation.

OR-5

Impact of Medical Imaging In Telehealth

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Aim: Medical images play a crucial role in diagnosis and treatment through the rapidly evolving telehealth domain. The objective here is to evaluate the overall impacts of medical imaging on the quality of telehealth delivery. Presented here is an in-depth exploration of medical imaging in telehealth covering its applications, benefits, challenges, technologies, etc.

Methods: Medical imaging uses patient images to diagnose, monitor, and treat the medical conditions of the patients. Telehealth platforms use multiple modalities. Modern telehealth solutions are equipped with remote tools for imaging operations. Telehealth platforms help to exchange medical images with specialists; 3D reconstruction of medical images allows the creation of volumetric images, providing greater details and context for diagnosis. It helps in tracking size/shape of tumours in cancer patients or assessing the healing of bones after a fracture. The image registration technique superimposes different imaging modalities to

provide blends of anatomical visuals, increasing clarity and accuracy in diagnosis and treatment. Artificial intelligence (AI) allows image analysis, hence detecting abnormalities, improving diagnostic accuracy, and speeding up interpretation during the telehealth session. As processed images can be shared across different departments through telehealth platforms, a multidisciplinary approach enhances decision-making, especially in complex cases where input from various specialists is required. Medical imaging over a 5G network represents a significant advancement, particularly in emergency care using telehealth.

Results: Innovative technologies in medical imaging have transformed the way telehealth professionals visualise the internal structures of the body, diagnose diseases, guide treatments, and conduct patient monitoring. It also extended the capabilities of clinicians.

Conclusion: Medical imaging in telehealth has a transformative impact on healthcare delivery, making diagnostics more accessible, efficient, and collaborative.

OR-6

Navigating Tele-Dermatology Through Esanjeevani Platform: A Retrospective Journey in Virtual Skin Care

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Aim: This study analysed the demographic profile and characteristics of patients seeking teledermatology consultations via the eSanjeevani platform between March 2023 and February 2024.

Methods: This retrospective observational study utilised consultation data from the eSanjeevani platform, focusing on dermatology consultations at a tertiary care centre in North India. Patients accessed teledermatology services with the assistance of community health officers (CHOs), who facilitated consultations with specialists. The study included successful teleconsultations where diagnosis and treatment plans were established. All teleconsultations with insufficient data for diagnosis or those unrelated to dermatology were excluded. Data on patient demographics, disease characteristics, and medication use were collected and analysed. A satisfaction survey among CHOs regarding the teleconsultation process was also conducted.

Results: Among the 11,636 patients who sought teledermatology consultations, 6,407 (55.06%) successful cases were included in the analysis. The majority of patients were from rural areas (86.85%), with a mean age of 31 years, with more females (60.21%) than males. The most common diagnoses were infectious skin conditions, followed by eczema and acne. Teledermatology consultations saved an average of 445 km in travel distance and 467 INR in travel expenses per consultation. Satisfaction among CHOs was predominantly positive, with over 75% expressing satisfaction with the process.

Conclusion: Dermatology, being a visually aided field, is most suitable for teleconsultation. Teledermatology was initially designed to benefit rural areas, but limitations are encountered, especially in developing countries like India. Examples include restricted internet access, scarcity of smartphones, and low literacy rates. Consequently, this hindrance results in misdiagnoses and improper treatments. Teledermatology practice, assisted by CHOs, is effective in extending specialised care to remote areas in India, improving accessibility, and reducing healthcare-related travel burdens.

OR-7

Validating Earthshot: An Artificial Intelligence-Driven Point-of-Care Solution for Guideline-Adherent Treatment Planning in a Decentralised Cancer Care Model

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Background: Earthshot is a new, provider-facing solution for treatment planning for non-specialised providers. Adherence to guidelines improves overall survival and disease-free survival in cancer care. In resource-constrained settings, ~30% of patients receive undertreatment/overtreatment due to a shortage of oncologists, creating a knowledge gap that might be partially filled with digital artificial intelligence solutions.

Methods: This multicentre, prospective validation included patients with breast and oral cancer between January and June 2024, with all decision points (curative and palliative surgery, radiation, systemic therapies, and diagnostic workup) included. Earthshot first prompted a clinical navigator to complete case-specific questions, then matched input data with National Cancer Grid (NCG) guidelines, and output evidence-based treatment plans at the point of care. The output was shared at each centre and scored as concordant or discordant by the tumour board/treating oncologists, as well as by a group of experts experienced in NCG guidelines.

Results: Of 995 patients, 214 (21%) were excluded due to the presence of rare histology and scenarios not covered by the NCG guidelines. Among the 781 patients included from different centres across India, there were 573 patients with breast cancer and 208 patients with oral cancer. There were 710 patients with a confirmed diagnosis, and 71 patients with oral cancer had incomplete diagnostic workups. Patients were represented regarding age (<45 years: 33% and >45 years: 67%), and early stage (37%), advanced stage (55%), and incomplete staging workup (8%). Of the 781 patients, the output was concordant with NCG guidelines in 96% (749/781), with 21% (165/781) requiring additional guidance from the treating oncologists. Only 4% (32/781) of cases required referral to a tertiary centre for treatment planning.

Conclusions: Earthshot can improve capacity in resource-constrained settings by enhancing adherence to guideline-driven care across spoke centres. This point-of-care solution can reduce reliance on tertiary hub centres, influence treatment outcomes at scale, and improve patient outcomes in resource-constrained settings.

OR-8

Virtual Care, Real Impact: Transforming Obstetrics and Gynaecology Through Telemedicine—An Experience at a Tertiary Care Centre

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Aim: The study analysed the range of obstetric and gynaecological issues presented by patients seeking

teleconsultations through the eSanjeevani platform from April 2021 to August 2024.

Methods: A prospective observational study was conducted as part of an ongoing telemedicine project using the eSanjeevani-AB-HWC platform. This assisted teleconsultation platform connects patients in the Haryana state to specialists through community health officers (CHOs). The study included cases with complete information relevant to obstetrics and gynaecology. Cases lacking sufficient details or not related to this speciality were excluded. During each teleconsultation, the patient interacted with a specialist who provided a provisional diagnosis and management plan, which was sent as an electronic prescription for printing at the patient's location. Data on patient demographics, presenting complaints, diagnostic tests, and follow-up plans were collected and analysed.

Results: Out of 48,340 consultations, 29,475 (61%) were quality calls. The majority of these cases (17,390; 59%) involved gynaecological issues, with menstrual irregularities being the most common. Among pregnant patients (10,316; 35%), consultations primarily addressed early pregnancy complications, followed by concerns about high-risk pregnancies and medical disorders. There were 1,650 follow-up cases (5.6%), most of which were related to pregnancy issues. Additionally, 4.8% of cases were referred for surgical intervention.

Conclusion: In India, various menstruation health-related myths contribute to misdiagnoses and inappropriate treatments among women with abnormal uterine bleeding. Telemedicine provides a valuable platform to address these issues. In obstetrics, the timely identification of high-risk conditions and prompt management can be the difference between life and death for both mother and baby. This platform empowers CHOs to make informed referral decisions for high-risk conditions, ensuring timely and expert medical care for underserved populations.

OR-9

All India Institute of Medical Science (AIIMS) Rishikesh Digital Academy: Pioneering The Future of Healthcare Education Using Digital Media and Artificial Intelligence

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Background: The *All India Institute of Medical Science (AIIMS) Rishikesh Digital Academy (ARDA)* initiative, whose motto is “Innovate, Educate, Medicate,” updates medical education through digital media, artificial intelligence (AI) and advanced technology. The ARDA AIIMS includes AI in healthcare for diagnostics, personalised learning, and real-time feedback. In remote areas, drones are used to deliver medical supplies. E-learning to create a digital platform for high-quality educational content. Remote patient monitoring to train healthcare professionals in digital device use, and teleconsultation to provide remote healthcare access.

Methods: High-quality audiovisual recording equipment captures lectures, clinical demonstrations, and healthcare procedures. Artificial intelligence tools and advanced editing software are used to process, cut, and mix this content, ensuring a polished and engaging presentation. The final material is uploaded to ARDA digital platform, which makes it accessible to healthcare professionals. Additionally, live healthcare events are telecasted using real-time streaming technology, and interactive features are embedded to enhance participation.

Results: The ARDA digital education has engaged thousands of learners, while AI-driven tools have personalised learning experiences. Remote monitoring and teleconsultation systems have improved patient care delivery, and the use of drones and AI has expanded access to healthcare in remote areas.

Conclusion: The ARDA is leading the digital transformation of healthcare education, combining AI, drone technology, e-learning, and teleconsultation. The platform offers educational content on topics such as episiotomy care, C-section care, maternal adaptation, immunisation, newborn care, postnatal diet, and family planning, with over 2,666 views of its educational content. The ARDA is well-positioned to continue innovating and expanding its global reach in healthcare education.

OR-10

Tele-ICU at a Remote Centre: Impact on Quality Indicators and Patient Outcomes

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Aim: Patient safety and nursing efficiency are critical components of delivering high-quality healthcare. In response to the growing need for real-time monitoring and proactive intervention, Apollo Hospitals implemented the Enhanced Connected Care (ECC) programme. This initiative integrates advanced monitoring technologies and centralised oversight to continuously track patient vital signs, enabling timely responses to clinical changes. The ECC programme aims to reduce adverse events, enhance nursing efficiency, and improve overall patient outcomes. This service evaluation assesses the impact of the ECC programme on patient safety and nursing care efficiency, highlighting its role in transforming ward care and setting new benchmarks for connected healthcare delivery.

Methods: A prospective observational study was conducted in Apollo Hospitals. Data were gathered from 183 patients using medical devices. The evaluation focused on key outcomes, including patient safety measured by the number of ECC alerts requiring intervention, critical care admissions, and code blue calls. Nursing efficiency was assessed by comparing the time spent managing intervention-related alarms to the time spent on routine monitoring.

Results: In terms of patient safety, 1954 ECC alerts were generated that required intervention: 66 were admissions to critical care, and three were code blue calls. Regarding nursing efficiency, the mean time spent on managing alarms was 2:22 min, which was less than the mean time spent on routine monitoring of 3:21 min.

Conclusion: The enhanced connected platform with real-time data analytics and clinical decision support tools facilitates informed decision-making and drives continuous improvement in patient care by allowing patient safety and assisting nursing time spent on patient monitoring.

OR-11

Improving Thyroid Nodule Evaluation Using Deep Learning and Ultrasound Imaging

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Aim: The thyroid, a small, butterfly-shaped gland in the neck, produces hormones essential for regulating various metabolic processes. Common thyroid conditions include thyroid nodules—abnormal growths or lumps within the thyroid—as well as hypothyroidism and hyperthyroidism. This study presents a technique for thyroid nodule detection in USG images using DL for feature extraction.

Methods: Thyroid ultrasonography (USG) imaging is widely used to detect and categorise thyroid abnormalities, which can significantly impact metabolism and overall health. Advances in artificial intelligence (AI), especially deep learning (DL), have enabled the identification and analysis of patterns in clinical images due to DL's ability to extract hierarchical feature representations from images without the need for annotated data. Accurate identification of malignant thyroid nodules, distinguishing them from benign ones, is crucial for reducing unnecessary fine needle aspiration (FNA) procedures. Two pre-trained DL models, ResNet-18 and VGG-19, were fine-tuned for classifying thyroid USG images. Both models were trained and tested on the Digital Database of Thyroid Ultrasound Images (DDTI), a gold standard dataset.

Results: Classification accuracies of 97.13% were reported for ResNet-18 and 90.31% for VGG-19, with ResNet-18 demonstrating superior performance in classification accuracy over VGG-19.

OR-12

Integrated Kidney Disease Database: Towards Collecting Data in Resource-Limited Settings

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Aim: Inadequate source documentation results in incomplete data capture in kidney disease registries, especially in low-resource settings where health systems lack centralised electronic data mechanisms. Data are often recorded in unstructured physical formats, leading to poor patient follow-up. The Integrated Kidney Disease Database (IKDD) is an attempt to overcome some of these hurdles.

Methods: The IKDD is an electronic database that leverages mobile technology to enhance patient-provider partnerships and streamline source documentation collection. A mobile app allows healthcare providers and patients to upload documentation (photos of records, prescriptions, etc.) after simple registration. These data are linked to a unique patient identifier and can be submitted regardless of the hospital where services were provided. The app connects to a database that facilitates the creation of structured forms for disease registries and bio-banking, allowing trained personnel to populate registry forms with the uploaded data.

Results: The IKDD was piloted in the Nephrology Department at the Postgraduate Institute of Medical Education and Research (PGIMER), Chandigarh, starting in September 2022, registering over 10,000 patients. The system allows for multiple user roles and is available via an invitation-only mobile app. It is scalable, enabling secure data sharing with other databases like clinical trials. Patients provide electronic consent upon first login, and the system meets data security standards with all activities logged. The app serves as a comprehensive repository for each patient's disease-related documents, enhancing data collection in low-resource settings without straining existing healthcare services.

Conclusion: The IKDD platform empowers patients to actively manage their health data, transforming them from passive recipients to partners in care. This approach addresses the impracticality of relying solely on healthcare systems for data collection, especially in resource-limited settings. Once data are gathered, it enables centralised analysis of kidney disease types and progression. However, access may be limited in some areas due to the need for basic smartphones.

P-1

Empowering Marginalised Populations With AI-driven Oral Care

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Aim: The objective of this study is to develop and validate Caare Oral AI, an artificial intelligence (AI)-powered tele-dentistry platform designed to bridge the gap in oral healthcare access, particularly in underserved populations.

The platform is focused on improving early detection, diagnosis, and management of oral diseases through AI-driven image analysis and remote consultations. In addition, it has the potential to detect oral cancer at early stages, which is crucial for improving survival rates.

Methods: Data were collected from 100 patients across Thiruvananthapuram with various oral health conditions. Smartphone-captured oral images were uploaded to the platform, where the AI model was used to analyse them for potential diseases. The AI was trained on an in-house and open-source dataset of 10,000+ images, achieving a specificity of 90% in identifying oral diseases. The study included a focus on early detection of oral cancer, a critical area where timely intervention can save lives.

Results: Caare Oral AI demonstrated high accuracy in detecting a wide range of oral diseases, including cavities, gum disease, and precancerous lesions. The platform enabled the early identification of 95% of cases that might have otherwise gone unnoticed, particularly in remote areas with limited access to dental care. Remote consultations facilitated by the platform led to increased patient satisfaction, timely treatment, and reduced delays in care.

Conclusions: Caare Oral AI has significant potential to improve oral health outcomes by providing accessible, accurate, and early-stage dental care. The ability to detect oral cancer at an early stage further underscores its value. Ongoing research and evaluation are required to assess the long-term impact of the platform and to explore its seamless integration into existing healthcare systems, ensuring widespread adoption and sustainable improvements in oral health.

P-2

Analysing Patenting Trends on Telemedicine Tools

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Aim: This study comprehensively analysed patenting trends in telemedicine tools across three major jurisdictions: the United States, the European Union, and India, as well as Patent Cooperation Treaty applications.

Methods: Approximately 13,000 patents were meticulously filtered and categorised into distinct functional

areas, including consultation, diagnosis, treatment, and remote patient monitoring. Applying a comparative approach, the variations, and similarities in patenting practices and trends were identified. The focus on innovation underscores the strategic priorities of different regions in advancing telemedicine technologies. A vital analysis component involved prosecuting patents, which included a detailed examination of patent claims, first examination reports objections, and the nature of collaborations for the inventions.

Results: This comparative analysis sheds light on the evolving landscape of telemedicine patenting and its implications for stakeholders across the healthcare and technology sectors. The findings offer a more in-depth understanding of regional patenting dynamics and contribute to the broader discourse on commercialising and regulating telemedicine technologies.

Conclusions: The intricate interplay between technological advancement and intellectual property protection in telemedicine offers a nuanced perspective on how different these jurisdictions are navigating the complexities of patenting in this rapidly evolving sector. Product mapping regarding patenting reveals interesting trends about telemedicine tools in India.

P-3

Integrating Artificial Intelligence in Daily Practices and Perspectives From the Clinical Laboratory

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Aim: The advent of evidence-based medicine has imparted the clinical laboratory with a central role in the diagnosis of diseases and disorders. Artificial intelligence (AI) can help improve the efficiency of the laboratory by increasing diagnostic accuracy, streamlining workflows, and supporting decision-making. This survey evaluated the perceptions, interest, and ideas of the laboratory personnel regarding the necessity, implementation, value, and potential challenges in the use of AI in the clinical laboratory.

Methods: A questionnaire-based survey on the use and application of AI in the clinical laboratory was conducted between August and September 2024.

Results: Among the total of 40 replies received, 34 were complete, representing laboratory medicine practitioners in biochemistry (14), pathology (13), and microbiology (7) from different institutes in North and Eastern India. Hence, the results were computed considering $n = 34$. The study included 23 (67.6%) female and 11 (32.4%) male participants, having a mean age of 41.85 ± 8.47 years. In this population, there were associate professors (9: 26.5%), assistant professors (9: 26.5%), tutor/demonstrators (2: 5.9%), senior consultants (7: 20.6%), and consultants (7: 20.6%) belonging to the state government (17: 50%), the Government of India (5: 14.7%), and private sector (12: 35.3%). The mean work experience was 11 ± 6.89 years. There were 27 (79.4%) who planned to employ it in the future, with 25 (73.5%) feeling it would be difficult and all believing it would be expensive. There were 32 (94.1%) of the opinion that AI will be valuable, but implementation will be challenging. A significant positive correlation was seen between the work experience and work sector of the participants, with the government employees with work experience between 8 and 11 years being the most inclined. **Conclusion:** The survey reveals that the requisite knowledge of AI and its use are lacking in the medical community. A thorough understanding of the value, limitations, potential challenges, and their solutions is needed before its introduction.

P-4

Positive Impact of the Implementation of Tele-ICU Service in a Tertiary Care Hospital

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Aim: Highlighted here are the last 3 years of our experience with the tele-ICU project, especially tailored for a patient's bystanders. Kerala is a state with the highest number of non-resident Indian (NRI) population, with every household having a minimum of at least one member residing abroad.

Findings: Being admitted to the intensive care unit (ICU) can be traumatising not just for the patient but for their family members as well. During this critical time, family and friends often want to be at the patient's side. However,

it is essential to consider limiting physical visits to prevent infections, as the ICU can become a hotbed for infections. Even if bystanders cannot be present physically, setting up a tele-ICU service helps them stay connected virtually. This becomes all the more crucial if the family members are staying abroad and unable to visit. Simple gestures over video calls can boost a patient's spirit. It is like throwing a lifeline in choppy waters; it reminds patients that they are not alone and encourages communication through updates on their condition, sharing memories, or even light-hearted conversation. A familiar voice can work wonders in the healing process. The barrier of not being able to make a physical visit can now be easily bridged and can be considered a protective shield around your loved one. It also helps the caregivers do their jobs without distractions.

Conclusion: This paper highlights our journey and how the stated needs quickly multiplied, which required expansion of the tele-ICU service from the medical ICU to surgical ICU, cardiac ICU, then the neuro ICU, and finally to the paediatric ICU. The challenges incurred and solutions employed in this journey are reported here.

P-5

Proficiency, Willingness, and Perspectives of North Indian Medical Students on Incorporating AI Into Clinical Practice: A Cross-sectional Study

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Aim: The advent of artificial intelligence (AI) has not left the medical fraternity untouched. It promises substantial capability to augment diagnostics, therapeutics, and person-centred care. While other developed countries are taking the necessary steps to amalgamate AI in clinical practice for medical students, there is a lack of formal AI training in the Indian medical curricula. This study assessed the Indian medical students' perceived understanding, eagerness, and perspective on using AI in their practice of medicine.

Methodology: This questionnaire-based cross-sectional survey was conducted among MBBS students from Phase 2 onwards and interns at a medical college in Delhi. A pre-validated Turkish survey tool was used, which

included 12 Likert scale questions on their knowledge and perceptions of AI, along with their opinions on incorporating AI-related topics in their course work. Data were represented as percentages and frequencies and were analysed using descriptive statistics.

Results: Among 101 respondents, 25% had no prior knowledge, while 40% revealed minimal understanding of AI. Only 5% of students felt confident in evaluating AI-driven diagnostic tools. Remarkably, 90% of students favoured including AI training in their educational programme and recognised that acquiring adequate knowledge and skills about AI applications, its ethical ramifications, and use of AI for diagnosis and treatment of psychiatric diseases as the most pressing topics.

Conclusions: Medical students studying in the capital of India lack AI literacy, with limited exposure to AI tools. However, students support including formal AI training in the medical curriculum—which seems imperative to prepare the Indian medical graduates to be globally relevant in an AI-driven healthcare system.

P-6

Teleconsultation for Scabies Management in Rural India: An Observational Study Over Four Months

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Aim: Scabies, a contagious skin disease caused by *Sarcoptes scabiei*, remains a significant public health concern in rural India. Limited access to healthcare services in these areas necessitates innovative approaches such as teleconsultation to ensure timely diagnosis, treatment, and saving resources. This study evaluated the effectiveness of teleconsultation for diagnosing and managing scabies in rural India, focusing on treatment patterns and outcomes.

Methods: We conducted a retrospective observational study between June 2024 and September 2024, analysing teleconsultation data from rural regions. Consultation records, including patient demographics, chief complaints, vital signs, diagnosis, treatment recommendations, and follow-up adherence, were collected using real-time telemedicine technologies. Descriptive statistics were used

to analyse demographic characteristics, scabies diagnosis rates, common symptoms, and prescribed treatments and outcomes.

Results: The analysis included 13,233 telemedicine consultation requests. The mean age of the patients was 28 ± 16.74 years, and 39.52% of the patients were male. Telemedicine was useful in providing a definite diagnosis of 92.41%. Referral to a dermatologist was recommended in 8.23% of the cases. The predominant presenting symptom was generalised itching, followed by skin lesions and rashes. The conventional treatment strategy was administering Ascabiol (benzyl benzoate) lotion for three nights and application of Tetmosol (monosulfiram, citronella oil) soap on the fourth day and continuing for longer than 3 days. Follow-up consultations were arranged for these patients. In 80% of instances, treatment outcomes were favourable, with notable symptom alleviation observed within 1 week.

Conclusion: Teleconsultation demonstrated to be an effective method for controlling scabies in rural India—achieving 80% positive treatment outcomes. The integration of Ascabiol lotion and Tetmosol soap, with hygiene instructions, provided a straightforward and efficacious treatment regimen. Most cases can be effectively managed through teleconsultation, reducing the need for in-person dermatologist visits and saving resources. Further research should focus on improving follow-up adherence and optimising teleconsultation for rural healthcare.

P-7

Tele-Ocular Pathology: Evaluating Remote Diagnostic Accuracy Through Email Submissions

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Aim: This study evaluated the effectiveness and diagnostic concordance of ocular pathology cases from over 400 telepathology referrals received at Postgraduate Institute of Medical Education and Research (PGIMER), Chandigarh Centre of Excellence in Telepathology at the Regional Resource Centre (North). The study highlights

how email-based telepathology supports rapid, high-quality diagnostics, enhancing patient convenience and clinical decision-making.

Methods: A retrospective analysis of 104 ocular pathology cases reviewed from November 1, 2023, to October 31, 2024. The workflow included an initial assessment of image quality for photomicrographs, clinical images, and videos for quality and reportability, with follow-up as needed for optimisation. Each case was assigned a TP (unique reference) number and categorised by diagnostic parameters to establish concordance between the provisional diagnosis by the referring pathologist and the final telepathology report. Ancillary tests, such as special stains and immunohistochemistry (IHC), were recommended, as required, to enhance diagnostic accuracy.

Results: Among the 104 ocular telepathology cases analysed, 67 (64.4%) were neoplastic (36 malignant, 31 benign) and 37 (35.6%) were non-neoplastic. Topographic distribution included 32 eyelid, 29 conjunctiva, 13 enucleation, 13 orbit, 8 lacrimal gland, and 8 other cases. Concordance between the provisional and final diagnosis was achieved in 79.8% of cases, underscoring the reliability of this model. Static images sometimes proved limited, particularly in enucleation cases, where video submissions provided crucial diagnostic context. On average, each case included 7.4 photomicrographs, 1.8 clinical images, and 1.65 videos. Recommendations for ancillary tests were provided selectively. The model achieved an average turnaround of 12 to 18 h, providing significant time and cost savings for patients and aiding therapeutic decision-making.

Conclusion: Email-based ocular telepathology presents a robust and efficient model for remote diagnostics, delivering high diagnostic concordance and substantial patient benefits. This framework establishes a standard for image quality and reporting formats, ensuring high-quality diagnostic support across remote and underserved areas.

P-8

Serious Games in Healthcare: A New Frontier for Indian Healthcare Innovation

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Background: Serious games, designed with the purpose of addressing real-world issues through interactive gameplay, incorporate educational, therapeutic, and motivational elements to positively impact health behaviours and encourage healthy lifestyles. In the context of healthcare, serious games offer a unique opportunity to revolutionise the sector by making health-related tasks both engaging and educational.

Opportunities and Challenges: With India's rapidly expanding digital reach and gaming industry, the healthcare sector presents fertile ground for serious games. Serious games in healthcare have been applied previously in various clinical trials as an intervention, where they proved to be effective in various diseases such as cancer, asthma and mental health disorders. However, challenges persist, including the need for culturally sensitive design and the active involvement of healthcare professionals in development, which is crucial for ensuring credibility and effectiveness. In India, serious games face additional hurdles, such as regional diversity and cultural norms. Nevertheless, the potential for growth is significant, with India poised to become a leading hub for digital health games, spurred by increased internet access, the advent of 5G, and evolving consumer behaviours.

Strategies: The Indian government's support for the gaming industry, including 100% foreign direct investment, further bolsters growth prospects. To fully leverage the potential of serious games in Indian healthcare, strategies must be culturally relevant and socially acceptable to ensure their impact. With thoughtful implementation and increased collaboration between the healthcare and gaming industries, serious games can help with improving the level of knowledge, changing behaviours, improving motor skills and managing emotions.

P-9

Designing an Admission Prediction Model in Medical Institutes Using AI and Fuzzy Logic

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Aim: The admission process for undergraduate programmes (UG) and postgraduate programmes (PG) in medical institutes is highly competitive, involving numerous variables such as academic performance, entrance exam scores, personal interviews, and extra-curricular achievements. Traditional methods of evaluating candidates can be time-consuming, biased, and prone to human error. This paper presents a model that combines artificial intelligence (AI) and fuzzy logic (FL) to predict the likelihood of student admission, improving the efficiency, fairness, and accuracy of the selection process.

Methods: The model utilises machine learning algorithms, specifically decision trees and neural networks, to analyse historical admission data and identify key predictors of successful admissions. Academic performance, entrance scores, socio-economic background, and non-academic factors are considered in the training process. The dataset used includes multiple years of admission data from medical institutes, with diverse candidate profiles. The AI component processes these data to determine patterns, while the FL system integrates qualitative judgements (e.g. interview performance) into the decision-making framework.

Results: The AI- and FL-driven model demonstrated an 85% prediction accuracy, outperforming conventional admission approaches, which had an accuracy of approximately 70%. The model successfully captured non-linear relationships between admission factors and student success, providing more reliable predictions, especially for borderline cases. Furthermore, it was noted that the system reduced human bias and increased transparency in the decision-making process, particularly when handling subjective inputs such as interviews and recommendations.

Conclusion: The integration of AI and FL in the admission prediction process for medical institutes significantly enhances the accuracy, fairness, and efficiency of candidate selection. The model can serve as a decision support tool for admission committees, allowing for data-driven, unbiased decisions that align with the goals of promoting diversity and equity in education. This approach can be scaled and adapted to other educational institutions, contributing to the broader goal of improving access to quality education as outlined in Sustainable Development Goal 4. Future work will focus on refining the model for specific regional contexts and expanding it to account for evolving admission criteria.

P-10

Artificial Intelligence in Healthcare: Exploring Knowledge, Attitudes and Perceptions of Future Professionals From a Medical College in Maharashtra

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Aim: The integration of artificial intelligence (AI) within medical education and healthcare practice marks a significant evolution in the field, potentially reshaping traditional methodologies. This study assessed the knowledge, attitudes, and perceptions of healthcare profession students regarding AI.

Methods: A digital survey was administered to undergraduate health profession students from a medical college in Maharashtra using social media platforms. The survey gathered demographic data and assessed students' knowledge, attitudes, and perceptions concerning AI, as well as perceived barriers to AI integration. Regression analysis was employed to identify associations between demographic or academic variables and Katy Advanced Program scores.

Results: A total of 245 valid responses were received. The study revealed that participants possessed a moderate level of AI knowledge. Male students with prior exposure to AI showed a higher level of AI knowledge. While students generally recognised the value of AI, attitudes varied, with 23% wary of AI's capacity to replace human educators, while 64% acknowledged its potential benefits in specific applications. Despite familiarity with AI tools in certain tasks, their adoption in broader educational and clinical contexts remained limited. Major barriers include limited knowledge, restricted access to AI tools, time limitations, and curricular gaps.

Conclusion: These findings highlight the necessity to broaden AI topics within medical curricula and address prevalent barriers. By equipping students with essential AI skills and knowledge, the healthcare sector can better harness AI to enhance patient care and educational practices in the future.

P-11

Impact of Comprehensive Telehealth Services on Treatment-Seeking Behaviour, Adherence, and Recovery Among Tribal Communities in Nashik, Maharashtra

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Aim: To evaluate the effect of comprehensive telehealth services, combined with an ePharmacy model for doorstep medicine delivery, on treatment adherence and health outcomes among tribal communities in Maharashtra.

Methods: The Intelhealth Arogya Sampada Programme was implemented in two tribal blocks, reaching 15,000 people. Community health workers provided teleconsultations, while an ePharmacy model linked virtual prescriptions to local pharmacies, enabling medicine delivery to patient homes. A retrospective study with 200 clients assessed outcomes before and after the ePharmacy intervention.

Results: Post-intervention data showed a significant improvement in medication adherence, with unfilled prescriptions dropping from 67% to 18%, and delayed care due to cost barriers reduced by 8%. The rate of symptom improvement rose from 49% to 67%, and recovery from specific conditions increased by 5%. Client satisfaction with teleconsultations was 90%, and 96% for medicine delivery.

Conclusion: Integrating telemedicine with an ePharmacy model effectively addresses access and adherence barriers, enhancing health outcomes and care-seeking behaviour. This model is impactful in addressing socio-economic challenges in tribal communities, making healthcare both accessible and affordable.

P-12

Strengthening Quality of Esanjeevani National Telemedicine Services in Odisha and Jharkhand States Using the Clinical Quality Index Tool

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Aim: To improve the quality of telemedicine services in Jharkhand and Odisha through a clinical quality index (CQI) tool that monitors clinical and operational indicators for eSanjeevani telemedicine consultations.

Methods: Supportive supervision visits were conducted at 595 health and wellness centres (HWCs) across both states, using a CQI tool with 47 indicators across seven domains, including clinical processes, patient-centred care, and safe practices. Data from supervision checklists were analysed to assess and improve service quality.

Results: Registration rates were 98% in Jharkhand and 97% in Odisha, with high compliance in patient screening, consent processes, and consultation protocols. Over 90% of patients in both states received medications at HWCs, with average teleconsultation times between 15 and 20 min. Patient satisfaction rates were 96% in Jharkhand and 90% in Odisha.

Conclusion: The CQI tool proved effective in enhancing telemedicine quality, identifying key areas for provider training and infrastructure improvement. Continuous assessment and targeted interventions are essential for sustaining high standards of telemedicine, ensuring that underserved populations receive comprehensive, high-quality care.

P-13

Role of Digital Twins in Healthcare

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Aim: Digital twins (DTs) are increasingly making their way into the healthcare sector. Adopting DTs into healthcare can enhance patient care, improve outcomes, and streamline medical processes. Here is a detailed look at the roles that DTs play in healthcare.

Methods: Digital twins enable a personalised approach in healthcare as each patient's real-time data models are used for analysis, hence delivering precise treatments, medications, and care plans. These models are powered by continuous data input from sensors, wearables, Internet-of-Things devices, and medical records. In drug discovery and management, researchers can simulate how that patient might respond to different treatments, medications, or lifestyle changes and then tailor medicines to meet specific patient needs and biological profile. By examining virtual models, clinicians can visualise health metrics, assess risks, simulate possible treatments, and predict disease progression. Predictive analytics help anticipate preventive care steps for potential health issues. Patient engagement, mental health, and rehabilitation can be improved using integrated DT models for psychological and behavioural data. Digital twins help simulate complex surgeries. These models allow surgeons to anticipate potential risks, optimise procedures, and personalise rehabilitation. By incorporating genetic data, a DT can predict disease susceptibility and response to certain treatments/medicines, making precision medicine more accessible and actionable.

Results: By creating dynamic and real-time data-driven models of individual patients and virtual models for connected devices/systems, DTs can revolutionise various aspects of medical care, ranging from diagnostics, treatment planning, patient monitoring, and healthcare infrastructure management.

Conclusion: By addressing several adoptions, DTs are revolutionising healthcare by offering personalised, predictive, and efficient medical care.

P-14

Medical Standards for Telehealth

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Aim: In the current digital era, telecommunication technology is used to deliver health-related services in addition to medical data. To help ensure effective and safe delivery of quality healthcare, there is a need to implement medical standards for telehealth. Here, we discuss various medical standards that can be applied to telehealth.

Methodology: Medical standards are classified into various categories depending on their use, such as for identifying patients, defining function and structural requirements of the system, storing imaging and audio/video data, integrating medical devices, information security management, privilege management and access control, audit trail and logs, as well as data exchange and encrypting medical data. Patient identification can be achieved based on unique ID proof of the patient, such as an Aadhar number or local identifier. While designing a health system, some architectural and functional requirements follow ISO 18308:2011 and ISO/HL7 10781:2015 standards respectively. Integrated Systematised Nomenclature of Medicine–Clinical Terminology will be used for semantical interoperability and the International Classification of Diseases coding system for classification and reporting purposes. The system must be capable of storing scanned or captured records. Integrate Digital Imaging and Communications in Medicine for imaging/waveform exchange and Health Level Seven for event/message exchange. The telehealth system should follow guidelines by the Pharmacy Council of India for prescriptions and follow regulations by the Medical Council of India for discharge summary. Other standard practices such as role-based access, recording audit trails, and hashing algorithms can be used for secure data and communication. A Technology Without An Interesting Name (aka TWAIN) protocol can be used for communication between software and digital imaging devices.

Results: Implementing medical standards in telehealth will result in achieving a concrete secure uniform system providing interoperability and secure communication. Mercury™ Nimbus Neo is a telemedicine application by the Centre for Advanced Computing Pune, which implemented required medical standards.

Conclusion: Unstandardised telehealth systems can be exposed to security breaches and missing interoperability and integrity of patient valuable data. Implementing comprehensive medical standards will result in providing effective healthcare to patients.

P-15

Mechanisms of Privacy and Security in a Telehealth Scenario

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Aim: Clinical data are crucial factors in telehealth. Not maintaining privacy and compromised security could lead to fraudulent activities. Applications must be ready to fend off attacks from malevolent actors, which include identity theft, loss, sharing, misuse, impersonation and spoofing of electronic health records. As numerous components are involved in telehealth application setup, each one should be enabled with suitable security measures. This abstract covers various mechanisms of privacy and security for data and communication.

Methods: Telehealth data require confidentiality, integrity, and availability. To achieve these factors in any telehealth application, steps must be implemented across the entire telehealth software life cycle. Under design, misuse cases, and potential threats must be considered to minimise security flaws and bugs in telehealth software design. The development environment should be integrated with analysis tools like SonarLint and SonarQube to detect code quality issues and vulnerabilities. During data transmission, processing, or storage, the latest encryption standards and security algorithms should be implemented to establish confidentiality and data integrity. Multifactor authentication and granular authorisation should be implemented for data access. To identify potential risks, regular security audits should be performed. Other major considerations like server hardening, periodic system patches, anti-malware installation, data backups, and security update monitoring can be performed. Regular trainings on security and best practices shall be conducted at regular intervals in order for end users to understand the value of data privacy and security to adopt in their routine practice. A consent awareness programme shall be given to patients towards data capturing and sharing information.

Results: Implementing these mechanisms ensures safeguarding privacy and security in telehealth, resulting in compliance with regulatory standards.

Conclusion: Telehealth providers should be prepared to take extreme measures to guard their clients' private information from outsiders and data intrusions, thus improving trust to use telehealth.

P-16

The First Survey of Nurses' Knowledge, Attitude and Practice on Connected Care Monitoring in Wards

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Aim: Enhanced connected care (ECC) is transforming healthcare by integrating technology to advance patient monitoring and safety. Through continuous tracking of vital signs—heart rate, blood pressure, O₂ saturation, temperature, and respiratory rate—medical devices transmit data to a nursing station dashboard, enabling prompt nurse response. Nurses play a vital role in detecting early signs of patient deterioration, making their knowledge, attitudes, and practices critical to ECC's success and effective patient care. Presented here is an evaluation of confidence in using ECC technologies, time savings, perceived benefits and challenges, and the need for further training.

Results: The study surveyed 125 participants involved in ECC care, with 61% rating their confidence as 10/10 in using ECC technologies. Younger nurses (18 to 34 years) showed higher confidence, and increased nursing experience was significantly correlated with higher confidence. Enhanced connected care monitoring saved 5 to 10 min per shift for 47.2% of respondents, with more than 10 min saved mostly during night shifts. A significant correlation was found between knowledge and confidence ($p = 0.009$).

Discussion: Lower confidence levels among nurses aged 35 to 44 years indicate a need for targeted support through workshops or additional training to enhance their comfort with ECC technology. The positive link between knowledge and confidence suggests that regular training could enhance the proficiency of nurses with ECC tools. Greater time savings were noted during night shifts, aligning with the increased need for continuous monitoring during non-peak hours. Alarm fatigue was reported by 42% of ECC-using staff.

Conclusion: This study shows ECC technology's broad use and perceived benefits in improving patient outcomes. Nurses view ECC as a valuable tool that saves time, allowing for more direct patient care rather than manual recording of vital signs. Nonetheless, challenges remain. Targeted

workshops, support teams, and improved resources could further support ECC integration in healthcare practice.

P-17

Leveraging Telemedicine for Effective NCD Management and Improved Patient Engagement

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Aim: Non-communicable diseases (NCDs) pose a significant and growing public health challenge in India, particularly in states like Uttar Pradesh, where access to quality healthcare is limited for large segments of the population. Effective management of NCDs such as diabetes, hypertension, and cardiovascular disease requires regular monitoring, timely consultations, and sustained patient engagement, which often prove challenging in low-resource settings. The eSanjeevani telemedicine platform, a Government of India initiative, offers a potential solution by facilitating remote consultations and bridging the gap between healthcare providers and underserved communities. This study evaluated eSanjeevani for improved healthcare accessibility for rural and semi-urban populations.

Methods: In Uttar Pradesh, the focus is on accessibility, patient satisfaction, and clinical outcomes. Through a mixed-methods approach, we analysed usage data, patient demographics, and treatment adherence rates of individuals using the eSanjeevani platform for NCD management. Furthermore, structured interviews and observations with healthcare providers and patients were conducted to assess the perceived quality and acceptability of teleconsultation services.

Results: Initial findings suggest that eSanjeevani has improved healthcare accessibility for rural and semi-urban populations, with a marked increase in early detection and adherence to treatment protocols.

Conclusion: This research highlights the potential of eSanjeevani to strengthen NCD management in Uttar Pradesh through enhanced reach and continuity of care. The findings suggest that strategic investments in telemedicine infrastructure and workforce training can further optimise the impact of eSanjeevani, contributing to better health outcomes for NCD patients. Scaling such initiatives in

alignment with local needs and technological advancements may set a precedent for effective digital health interventions across India and other low-resource settings, worldwide.

P-18

Development of E-learning Platform for Medical Education: Vision to Reality

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Aim: The National Medical College Network (NMCN) project was established by the e-Health section, Ministry of Health and Family Welfare in 2015 for the purpose of e-Education and e-Healthcare delivery. Within this framework, a Learning Management Information System (LMIS)-Ministry of Health and Family Welfare (SAKSHAM) for medical education was created. The e-learning platform aims to eliminate barriers related to accessibility (geographical, infrastructural, resource availability) by disseminating quality educational courses on medical and health topics to students across the nation, by leading teachers who are subject-matter experts.

Methods: All India Institute of Medical Sciences (AIIMS), New Delhi, the National Resource Centre for NMCN project coordinated with all the stakeholders, including regional resource centres, network medical colleges, the *National Institute of Health and Family Welfare* (NIHFW), and Empower School of Health to design the interface of LMIS. Standard operating procedure guidelines and workflows for e-content development were prepared. In addition, standardised templates for content upload on the LMIS, review process systems, rating systems, and user feedback were created. In coordination with NIHFW team, we have stabilised SAKSHAM-LMIS platform.

Results: Medical undergraduate courses (anatomy, medicine, pathology, etc.) and skill-based modules interspersed with educative questions, discussion, and feedback forums aligned to the National Medical Commission curriculum are now live on the NMCN-SAKSHAM web portal and mobile app. So far, 305 courses and 442 lessons have been uploaded on the LMIS.

P-19

The Feasibility, Acceptability, and Usability of Tele-Follow-Up Sessions

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Aim: Telemedicine—the use of telecommunications and information technology to provide clinical health care at a distance—has been shown to be effective in various settings, including nuclear medicine. A tele-follow-up programme was implemented at the Sanjay Gandhi Postgraduate Institute of Medical Sciences (SGPGIMS) in Lucknow, India.

Methods: The programme involved the use of videoconferencing to connect patients with nuclear medicine specialists at SGPGIMS, Lucknow. Patients were able to receive follow-up care for various nuclear medicine procedures, including thyroid cancer, bone scans, and cardiac imaging.

Results: The tele-follow-up programme was effective in providing high-quality care to patients. Patients were able to receive timely follow-up care, and they were satisfied with the quality of care received. The programme also saved patients' time and money, as they did not have to travel to SGPGIMS for follow-up care. Tele-follow-up data over the last 10 years will be shared.

Conclusion: The tele-follow-up programme at SGPGIMS is a successful example of how telemedicine can be used to provide high-quality care to patients. The programme is cost-effective and saves patients' time and money. The programme is also well-received by patients, who are satisfied with the quality of care they receive.

P- 20

Telemedicine and Digital Health Using National Knowledge Network

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Aim: The National Knowledge Network (NKN) is a pan-India network for providing a high-speed network backbone for all knowledge-related institutions in the country. Being a superspeciality institute, the Sanjay Gandhi Postgraduate Institute of Medical Sciences (SGPGIMS) has a connectivity of 10 Gbps. Current medical applications demand high-speed internet connectivity for sharing/transferring medical data between institutions. Due to limitations in bandwidth provided by the Indian Space Research Organisation (ISRO), various applications prefer live surgical transmissions, high-definition, multi-party videoconferencing, virtual medical collaborations, and tele-mentoring needs using high-speed bandwidth as provided by the NKN. The goal was to share the use of NKN for various telemedicine and telehealth services at SGPGIMS.

Methods: The NKN has been fully functioning in SGPGIMS since 2010. It constitutes one of the major components of knowledge creation and use in the medical environment. The network has extended to various hospital departments and Host Integration Server (HIS) Room. Video conferencing systems (both static and virtual cloud server [VCS]) solutions, external multi-party video conferencing unit (MCU) and servers are configured and connected to NKN with a bandwidth of 2 Mbps Bharat Sanchar Nigam Limited (BSNL) lease line. Data of NKN are taken into consideration from the logbooks maintained by the School of Telemedicine & Biomedical Informatics.

Results: Detailed analysis of the last various telemedicine and telehealth services given to institute and network partners will be presented in detail.

Conclusion: Provision of high internet bandwidth from NKN is facilitating the institution's vision for sharing knowledge using telemedicine and content development. Overall, the NKN is a valuable resource for medical institutions in India. Its high-speed bandwidth can be used to support a variety of medical applications, including live surgical transmissions, high-definition multi-party videoconferencing, virtual medical collaborations, and tele-mentoring. The NKN can also be used to transfer large amounts of medical data.

P-21

Medical Video Preparation Methods for Tele-Education

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Aim: Medical educational videos are a potent resource for the learning of surgical skills among different study groups. Editing of surgical videos requires precision, attention to detail, and sensitivity due to the nature of the content. For tele-education videos, it requires the execution to ensure that the content is educational, informative, and suitable for remote learning for telemedicine use. The purpose of this abstract is to evaluate medical video preparation methods of medical students, residents, and faculty with special attention to e-learning and public health.

Methods: Preparing a medical video requires careful pre- and post-production planning, as well as proper equipment (camera and recording equipment, accessories and tools, and personal protective equipment), as well as adherence to ethical guidelines pre-production planning, recording the surgical procedure, post-production editing, review and quality assurance, distribution, and consent.

Result: After the raw video editing is completed, the output is a polished and well-structured video that effectively communicates the intended educational or informative content. The final result of the medical video includes smooth flow, clear narration, highlighted key points, accurate annotations, and the proper length timing from the raw unedited video to the meaningful educational content. The output video can be used for online education, telemedicine workflow, and making e-learning presentations as well as for continuing medical education.

Conclusion: Overall, the goal of medical video editing is to create an informative, accurate, and engaging educational resource that benefits medical students, healthcare professionals, and anyone interested in learning about the education procedure.

P-22

BaMBo: A Pioneering Dataset of Annotated Bone Marrow Biopsies for Semantic Segmentation

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Aim: Bone marrow examination is a cornerstone for diagnosing and managing haematologic and systemic diseases. However, current diagnostic methods rely heavily on subjective visual assessments by pathologists, leading to potential inaccuracies. Artificial intelligence (AI) tools offer the potential to enhance accuracy by providing consistent and objective measurements. Progress in developing such tools has been limited by the lack of publicly available, high-quality, and annotated datasets for bone marrow biopsy analysis. This study introduces the *Bone Marrow Biopsy* (BaMBo) dataset, a comprehensive and annotated collection of bone marrow biopsy images designed to facilitate automated segmentation and analysis, addressing the gap in resources for AI-based diagnostics.

Methods: The BaMBo dataset includes 185 high-resolution bone marrow biopsy images with semantic segmentation annotations. Each image is categorised into four classes: bony trabeculae, adipocytes, cellular regions, and background. Annotations were performed by two experienced haematopathologists and refined using advanced deep learning (DL) models and image processing techniques. To demonstrate the utility of the dataset, we trained a custom U-Net-based DL model for multi-class semantic segmentation, achieving a Dice Score of 0.831 ± 0.099 .

Results: The model effectively segmented various biopsy components, enabling accurate estimation of bone marrow cellularity. The BaMBo dataset facilitated object classification with a segmentation accuracy of 96%, highlighting its potential for advancing AI-driven bone marrow diagnostics.

Conclusion: The BaMBo dataset is a publicly available resource that addresses the critical need for high-quality, annotated bone marrow biopsy images. It serves as a foundational tool for training machine learning models to improve automated bone marrow diagnostics and enhance diagnostic accuracy.

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