Epistêmê

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AIIMS Guwahati reached a new milestone by welcoming its first batch of postgraduate students in various broad specialities for the session that commenced on January 1, 2024.

MESSAGE: PROF. ASHOK PURANIK, EXECUTIVE DIRECTOR, AIIMS GUWAHATI

I am indeed very happy to present the third edition of the news bulletin of AIIMS Guwahati – 'Epistêmê'. It gives me immense pleasure to witness the growth of this Institute since its inauguration in April 2023 by our Honourable Prime Minister Shri Narendra Modi. With an average daily footfall of 1,700 to 1,800 patients in our OPD, we have been able to cater to people from far-flung areas of Assam and neighbouring states. We have been providing state-of-the-art diagnostic and treatment facilities to our patients, and we commit to providing a better standard of care and excellence in the future. We have also introduced specialized services like drone delivery services to cater to hard-to-reach riverine areas. On the academic front, I am happy to share that our first batch of postgraduate students has joined the Institute. This newsletter reflects our commitment to providing good quality patient care, as well as our endeavours in achieving research and academic excellence by our faculty and students. The journal section of the news bulletin has showcased insightful academic articles to ignite the minds of the students and the young researchers of the Institute. I congratulate the editorial board and wish them success.

संदेश: प्रो. अशोक पुराणिक, कार्यकारी निदेशक, एम्स गुवाहाटी

एम्स गुवाहाटी की समाचार पत्रिका "एपिस्टेम" का तीसरा संस्करण प्रस्तुत करते हुए मुझे अत्यधिक हर्ष की अनुभूति हो रही है। अप्रैल 2023 में हमारे माननीय प्रधानमंत्री श्री नरेंद्र मोदी द्वारा इसके उद्घाटन के बाद से इस संस्थान की प्रगति को देखकर मैं अत्यधिक प्रसन्न हूँ। हमारे ओपीडी में प्रतिदिन औसतन 1700-1800 मरीज आते हैं और हम असम तथा पड़ोसी राज्यों के दूर-दराज के क्षेत्रों से आने वाले लोगों का उपचार करने में सक्षम हैं। हम अपने मरीजों को अत्याधुनिक निदान और उपचार सुविधाएं प्रदान करते रहे हैं तथा भविष्य में भी उत्कृष्ट सेवा प्रदान करने के लिए प्रतिबद्ध हैं। हमने दुर्गम नदी तटीय क्षेत्रों तक पहुंच सुनिश्चित करने के लिए ड्रोन डिलीवरी जैसी विशेष सेवा भी शुरू की हैं। शैक्षणिक दृष्टिकोण से, मुझे यह बताते हुए प्रसन्नता हो रही है कि स्नातकोत्तर छात्रों के प्रथम बैच का संस्थान में प्रवेश हो चुका है। यह पत्रिका, रोगी देखभाल के साथ-साथ हमारे संकाय और छात्रों के लिए अनुसंधान और शैक्षणिक उत्कृष्टता के प्रति हमारे समर्पण को दर्शाती हैं। इस पत्रिका के अनुसंधानिक अनुभाग में प्रकाशित शैक्षणिक लेख इस संस्थान के छात्रों और युवा शोधकर्ताओं के लिए प्रेरणादायक होंगे। मैं संपादकीय मंडल को बधाई देता हूं और उनकी सफलता की कामना करता हूं।

Major Institutional Events

The 4th Institute Day was observed on January 12, 2024, with a keynote address by Dr. C. Palanivelu, Laparoscopic Surgeon par excellence. Esteemed Cardiothoracic Surgeon Prof. Bhabananda Das delivered the Institute Day Oration.

Celebration of the 75th Republic Day at the Institute:

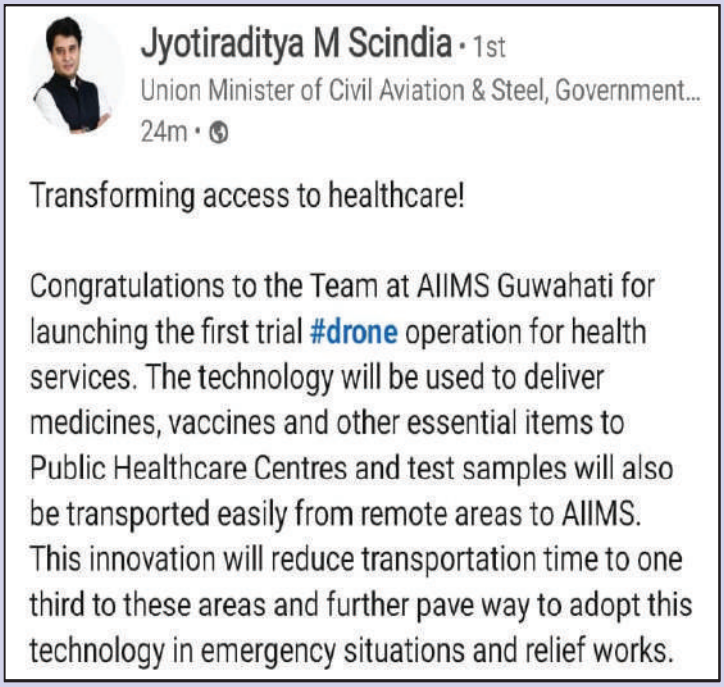
Department of Anatomy hosted the 6th Annual Conference of Anatomical Society of Assam – ANSACON 2024 from 4th to 6th April 2024. Faculties and delegates from all parts of the country graced the event.

Shri Apurva Chandra, Secretary, MOHFW – Govt. of India, visited AIIMS Guwahati. He engaged with stakeholders, including students, officials from the Institute, healthcare professionals, and project managers.

AIIMS Guwahati celebrated the 10th International Yoga Day by observing various programs during a 21-day countdown, which culminated with a grand Yoga session on June 21, 2024.

Services Started

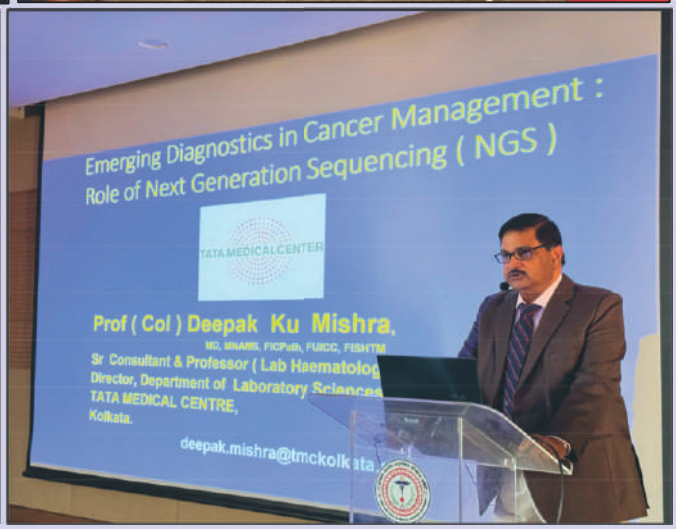
- Tobacco Cessation Services (TCS) by the Department of Psychiatry commenced from January 02, 2024.
- Gynaecology Cancer Clinic by Department of Obstetrics and Gynaecology started functioning from January 02, 2024.
- Addiction Treatment Facility (ATF) outpatient services under the Nasha Mukt Bharat Abhiyan (NMBA) program of the Ministry of Social Justice and Empowerment was inaugurated at Department of Psychiatry - AIIMS Guwahati in February 2024.
- AIIMS Guwahati launched the drone operations for health services on February 20, 2024. The operation is supported by National Health Mission, Assam and office of the Joint Director Health Services, Kamrup Rural.
- Hospital Based Cancer Registry (HBCR) was initiated with the signing of MoU between AIIMS Guwahati and ICMR-NCDIR on February 21, 2024.
- The Mortuary Complex of the Department of Forensic Medicine & Toxicology was inaugurated on March 21, 2024.
- Chemo Daycare of Department of Medical Oncology/Hematology was inaugurated on April 8, 2024.
- The Creche Facility at the Institute was inaugurated on May 28, 2024.
- The Autonomic Function Test and Heart Rate Variability Biofeedback Laboratory in the Department of Physiology, AIIMS Guwahati commenced its services from June 03, 2024.



First Drone Flight - AIIMS GUWAHATI- 20th Feb 24

CMEs/ Workshops/ Outreach Programmes

- One day sensitization program cum workshop on Snake Bite Management, Prevention & Control was organized on 8th January by the Department of CFM, AIIMS Guwahati. Dr. Surajit Giri, one of the snake bite experts from Assam, was invited as the resource person.
- A CME cum guest lecture was organized on World Cancer Day (6th February) by the Department of Biochemistry in collaboration with Departments of Pathology, Radiodiagnosis, Intervention Radiology, OBG and Radiation Oncology.
- A workshop on innovative solutions for simulation and moulage designing was conducted by the Simulation Lab Committee on 29th January.
- A grant writing workshop for implementation research was conducted at AIIMS Guwahati by ICMR from 31st Jan-3rd Feb.
- A CME cum workshop on best practices in sample collection, on the occasion of Phlebotomists Recognition Week, was organized by the Department of Pathology on 17th February.
- Department of Biochemistry in collaboration with Departments of Physiology and Anatomy observed the National Science Day on 28th Feb.
- Department of Orthopaedics conducted a free Bone Mineral Density (BMD) Camp on February 29th.
- The Research Cell - AIIMS Guwahati conducted its 5th SPSS workshop from 29th February to 2nd March.
- The Department of ENT organized a program on 2nd March on the occasion of “World Hearing Day" at the ENT OPD complex.
- A CME on the importance of biomarkers in acute clinical conditions was delivered by Prof. Salvatore Di Somma from Rome on 4th March.
- A Guest lecture was delivered by Prof. Dr. Ajith Kumar Kayal, Senior Consultant Anaesthetist, St. Georges University of London on "A Guide to the Guidelines - SEPSIS".



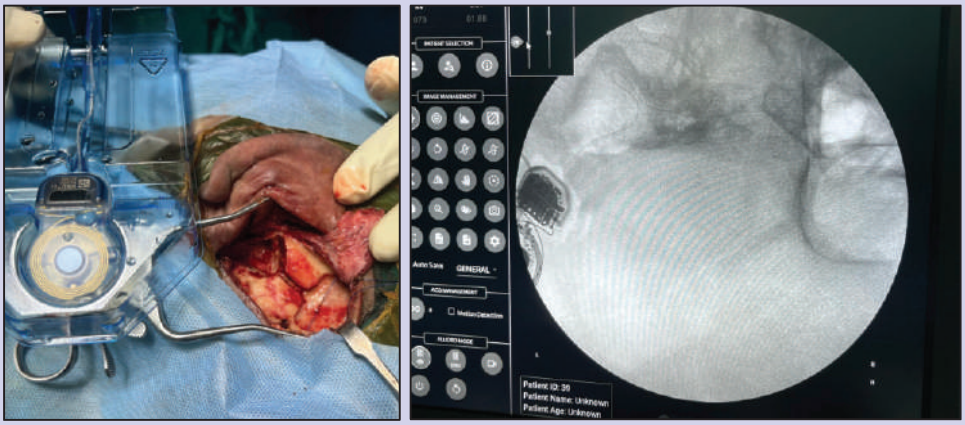
- Departments of General surgery, Orthopaedics, and Dentistry conducted a health camp at 24th Battalion SSB Rangia on 9th March.
- A Workshop on thesis protocol writing was conducted by Research Cell - AIIMS Guwahati on 9th March.
- A training program aimed at antenatal mothers and caregivers on effective utilization on Mother and Child Protection card for delivering Nurturing Care Early Childhood Development services was conducted by the Department of Paediatrics in collaboration with the Department of Community and Family Medicine, AIIMS Guwahati at Bezera CHC on 11th March.
- APGARS, a national event for Anaesthesiology post graduates was conducted by the Department of Anaesthesiology from March 15th to 17th.
- The Department of Surgery on 23rd March, successfully conducted the Surgical Nursing Training programme. All surgical departments gave their perspectives and it also involved practical demonstration, role play and interactive sessions.
- Department of Urology, AIIMS Guwahati had conducted a Kidney Health Awareness Program cum Health Camp at Saraighat Higher Secondary School, Amingaon on 30th March.
- An oral cancer screening health camp was conducted at Koroibari SC on 6th April on the occasion of the World Oral Cancer Awareness Month (April 2024). The camp was organised by the Department of CFM in collaboration with the Departments of ENT and Dentistry, AIIMS Guwahati and DHM, Kamrup, Assam.
- A Quiz competition for UG students was organized by the Department of CFM on the occasion of World Health day on 8th April.
- The Department of Medical Education conducted Senior Resident Training on Educational Principles (STEP) on 13th and 20th April where about 35 SRs were trained in various Teaching, Learning and Assessment methods.
- The Department of Transfusion Medicine and Blood Centre organized a blood donation camp in collaboration with GMCH Blood Centre on 19th April.
- The Department of Paediatrics at AIIMS Guwahati, in collaboration with NHM Assam, UNICEF, and the IAP Assam State Branch, conducted a training program on Raising Awareness on Autism Spectrum Disorder (ASD) on 23rd April.
- A User Awareness Programme on “Newly subscribed E-resources (2024)” by the Central Library, was held on 25th April at the Auditorium, AIIMS Guwahati.

- North East Critical Care and Emergency Medicine Conference (NECCECON) was conducted by the Department of Anaesthesiology, Critical Care and Pain Medicine in collaboration with IMA, ISCCM and ISA on 27th April.
- The Young India (YI) Guwahati chapter, in collaboration with the Department of Paediatrics at AIIMS Guwahati, organized a workshop focused on the early detection of autism, specifically designed for school teachers on 27th April.
- A CME on "Immunology and clinical perspective of uveitis" was organized by the Department of Ophthalmology on 27th April.
- AIIMS Guwahati family observed the World Earth Day on 29th April by a tree plantation drive.
- A CME cum consultative workshop on immunization was organized by the Department of CFM on 30th April.
- The Department of Paediatrics at AIIMS Guwahati, in collaboration with the IAP ALS BLS Group of Assam, conducted a community outreach program titled "Empowering the Future: Promoting Basic Life Support Awareness in School Children" on 8th May. Approximately 120 students from grades 6 to 10 were given hands on training on BLS.
- A short awareness program on the occasion of World Hand Hygiene Day 2024 was conducted by the Department of Microbiology on 10th May.
- "Swachhta Pakhwada" was organised by the Department of Hospital Administration from 13th May in the college campus premises.
- Department of Community & Family Medicine in collaboration with the Department of Pediatrics, AIIMS Guwahati organised an awareness program for promoting awareness on Menstrual Hygiene on 17th May at Karara Higher Secondary School. This event was conducted in observance of Menstrual Hygiene Day.
- Research Cell - AIIMS Guwahati conducted a workshop on the Art and Science of Writing a Manuscript for senior residents of the Institute on 18th May.
- A Workshop on 'Basics of Immunohematology' to discuss various practical aspects of red cell serology and to demonstrate the presence or absence of 'unexpected (non-ABO) antibodies' was organized by the Department of Transfusion Medicine and Blood Centre on 22nd May.

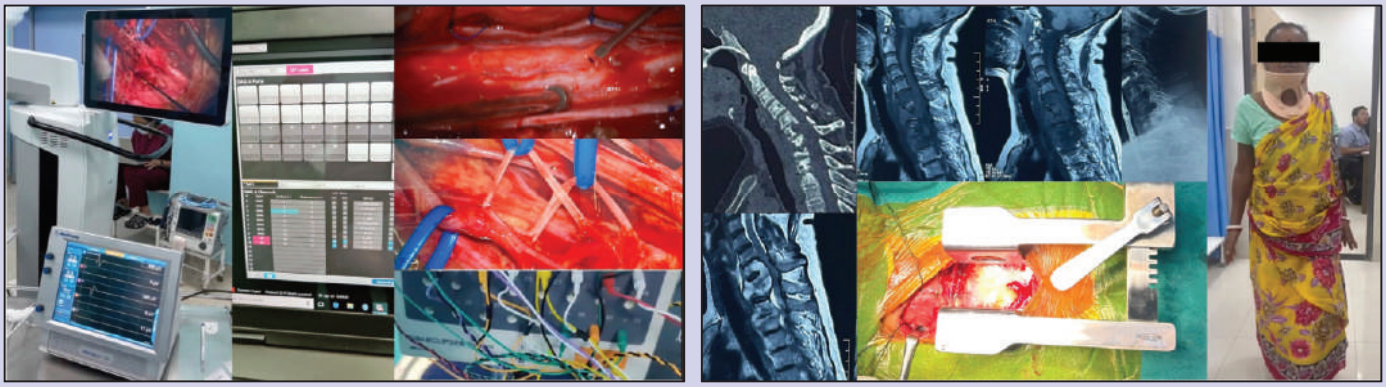
- AIIMS Guwahati in collaboration with District Health Society Kamrup conducted a multispeciality health camp at Goroimari CHC on 28th May. Specialists from Departments of Medicine, Paediatrics, Obstetrics and Gynaecology, ENT, Orthopaedics, Dentistry, Community Medicine, and Pharmacology consulted the patients and advised required treatment. The CHC is also served by the drone health service delivery of AIIMS Guwahati.
- On 31st May, the Department of Psychiatry, CFM and Hospital Administration observed World No Tobacco Day.
- IIT Guwahati in collaboration with AIIMS Guwahati, Department of AYUSH organized an awareness program on the benefits of yogic practices on 1st June.
- Department of CFM organized a workshop on "SampleSmart: Mastering Sampling Techniques and Sample Size Strategies" on 4th and 5th June.
- The Department of Anaesthesiology, Critical Care and Pain Medicine conducted hands-on training on CPR. The event was organised by JCI Princess Guwahati and JCI Ignite Guwahati in association with Subham Elite Housing Cooperative Society on 5th June.
- Clinical Workshop on Bio-interactive Aesthetics was conducted by the Department of Dentistry on 15th June, where live hands-on demonstration on patients was given.
- National Ayush Mission, in association with Indian Yoga Association and in collaboration with AIIMS Guwahati, organized an awareness session on women health along with a session on general welfare through yogic practices on 15th June.
- Department of AYUSH in collaboration with Telemedicine Unit organised a webinar on Integration of Ayurveda and Yoga: A step towards Holistic Health in the Management of Low Back Ache on 15th June.
- The Committee for Sickle Cell Disease Awareness organized a symposium on sickle cell disease on 19th June to create awareness about the condition among all employees of AIIMS Guwahati. A Quiz competition was organized by the Department of CFM in collaboration with AIIMS Sickle Cell Awareness Committee on 19th June.
- The Second national workshop on Good Clinical practices was conducted on 28th and 29th June by the Research Cell and Department of Pharmacology, AIIMS Guwahati.

Clinical and Surgical Achievements

Department of ENT has commenced cochlear implant surgeries at the Institute from February 2024.



The Department of Neurosurgery is providing unmatched care for brachial plexus injuries through advanced intra-operative EMG monitoring. The department specializes in performing rare and complex procedures, including DREZ lesioning with SSEP/MEP monitoring for causalgia. With the CTVS and Orthopaedics teams, the department also performed a complex anterior cervico-thoracic decompression and fixation on a quadriplegic patient. The Neuro-anaesthesiology team provides crucial support for such challenging procedures.



JOURNAL SECTION

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5	Boro SS. De M, Ahmed S, Kumari S, Neelam, Pramod. **Viking Disease in Northeast Indian population!!! Case report**. EPISTEME (Journal section). 2(1): p 21-23, January-June 2024.

Burden of Head and Neck Cancer in Northeast.

Prof. (Dr). N Brian Shunyu,
Professor & Head, Dept. of ENT and Head and Neck Surgery, and Medical Superintendent, AIIMS Guwahati

Head and Neck Cancer (HNC) is a major public health problem in India and the burden is on the rise as most of the infectious diseases have been controlled. Head and neck cancer in India has distinct demographic profile, risks factors, food habits and personal history. Head and neck cancers (HNCs) are the sixth most common cancer worldwide. Overall, 57.5% of global HNCs occur in Asia, especially in India.[1] In India, HNCs account for around 30 -40 % of the all-cancer cases.[2] Over 200,000 cases of HNCs occur each year in India, out of which 80,000 cancers are oral cancers.[3]The Cancer Atlas project by the Indian Council for Medical Research (ICMR) reports incidences of different cancers across India. The incidence of HNCs in Assam, Meghalaya, Mizoram, Manipur and Nagaland have been reported to be higher than the rest of India (54%). Mizoram has the highest incidence of lower pharyngeal and tongue cancer in men in the world, and Nagaland has one of the world's highest incidence rates of nasopharyngeal cancer.[4-6] Site-specific age-adjusted incidence rates for the oropharynx and hypopharynx are highest in Kamrup, Assam. [7] In Meghalaya, HNCs and esophageal cancers constitute 70.67% of cases of total body malignancy.[8] Head and neck cancers (HNCs) are malignant tumors of the upper aerodigestive tract including the oral cavity, nasopharynx, nasal cavity, paranasal sinuses, oropharynx, hypopharynx, and larynx–primarily originating from the mucosal epithelium, but also from less common sites like salivary glands, muscles, nerves and bone. Squamous cell carcinoma (SCC) constitutes for more than 90% of HNCs. Head and neck cancers are mutilating cancer and cause varying degrees of structural deformities and functional disabilities, compromising the basic physiological functions and appearance thereby affecting the individual well-being and self-esteem. Head and neck are also the regions where significant functional and cosmetic loss occurs as a result of cancer treatment.

The possible reasons for the higher incidence of HNCs in India include extensive use of tobacco, pan masala (which includes betel quid, areca nuts, and slaked lime), and gutkha. In India, among patients diagnosed with HNC, 86.5% were reported as tobacco users, and 23.2% were reported as alcohol users.[9] Tobacco and alcohol frequently coexist and lead to synergistic adverse prognoses. Five-year overall survival in patients who consumed both alcohol and tobacco were 29%.[9] RTOG0522 trial conducted in United States of America showed an HPV-positive rate of 73%, whereas an Indian study showed HPV-positive rate of 7.4–10.5% of total oropharyngeal carcinoma.[9]The development of oral cancer involves many factors working together in synergy to bring about alterations in two large groups of genes, viz., oncogenes and tumour suppressor genes. These alterations bring about molecular changes in both genetic and epigenetic levels leading to the diseased condition. Epigenetic modifications such as DNA methylation (hyper- and hypomethylation) of a specific gene(s) is known to be one of the factors involved in the development and progression of oral cancer. Several studies have shown a disparity in the level of DNA methylation of specific functional gene and their altered expression based on race and ethnicity. [10,11,12]

Delayed in the diagnosis and late-stage presentation led to poor prognosis. The 5-year median overall survival rate varies from almost 100% at stage 1 to below 40% at stage 4.[13] This is major concern because most of the HNC still present in an advanced stage in developing countries. In India 60 to 80% of patients present with locally advanced disease as compared to 30% in developed countries, reducing the overall survival rate of the patient.[14] Since 5-

year survival is directly related to the stage at diagnosis, the need is for early diagnosis by a clinician or by patient who may identify a suspicious symptom or lesion, while it is still at an early stage. Mortality in India due to HNCs is at least half of the incidence, basically due to the late presentation of patients for treatment with stage III mortality of 39% and stage IV mortality of 23%).[15] Patients with associated comorbidities show a lower survival rate than patients with no comorbidities with a median overall survival at 5 years of 16% vs. 84%, respectively.[13] And about 25–50% of these patients are found to be nutritionally compromised before the commencement of the treatment.

The choice of treatment should be decided by the multidisciplinary team. Rehabilitation, counselling, and nutritional therapy are important to improve a patient's adherence to the treatment and patient survival. According to National Comprehensive Cancer Network (NCCN) guidelines, early-stage (stage I and II) patients are treated using a single-modality approach with surgery or radiotherapy (RT). On the contrary, for patients with advanced-stage disease (stage III and IV), a multi-modality approach that includes chemotherapy (CT), RT, and Surgery.[16] Selection of modality of treatment depends on the subsite of cancer. When different modalities are available, the modality that gives the maximum chance of cure should be used. When different modalities have similar results, a modality that gives a better quality of life, with organ/function preservation is preferred.

Need of the region:

1. The highest priority for cancer control should be given to the burden of head and neck cancer. The emphasis should be on preventing the onset and detecting the disease at an early stage by mass screening- visual inspection. Early detection should therefore be an important strategy -through the two principal routes of public education and screening. Mass screenings for oral cancer are possible with visual inspection of the oral cavity giving real hope for primary prevention. Visual inspection is a suitable screening tool, as it is acceptable in terms of specificity, sensitivity, and predictive value.
2. Easy access to treatment: A large number of cancers diagnosed in the population are not treated, as treatment facilities are mostly restricted to urban areas. Thus, a multidisciplinary approach to cancer treatment should be made available at all district hospitals, given the long waiting lists of patients at tertiary centres and also the distance patients have to travel to get the treatment.
3. Government Health schemes and health insurance should be made widely available, as affordability is a major issue.
4. Comprehensive tobacco control programs should include education, awareness, legislation, school curriculum, community participation, and tobacco cessation services.
5. Lastly the very high incidence of HNCs in the Northeast is further compounded by the fact that there are only a few trained head and neck onco-surgeons, very few medical oncologists, and few radiation oncologists most of whom are based in the cities. Thus, the need of the hour is to produce more man power who can/will treat HNC patients, and a lot more original research on HNCs from the region.

Disease late-stage presentation, lack of access to treatment on time and failure to complete treatment led to poor survival in HNC patients.

References:

1. Chaturvedi P. Head and neck surgery. J Can Res Ther 2009; 5:143
2. Bhattacharjee A, Chakraborty A, Purkaystha P. Prevalence of head and neck cancers in the northeast-An institutional study Indian J Otolaryngol Head Neck Surg.2006;58:15–9
3. Head and Neck Cancer in India. Available from: http://www.veedaoncology.com/PDF-Document/Head-Neck%20 Cancer%20In%20India.pdf. [Last accessed on: 2011 Dec 26.
4. Nandakumar A, Gupta PC, Gangadharan P, Visweswara RN, Parkin DM. Geographic pathology revisited: Development of an atlas of cancer in India Int J Cancer. 2005;116:740–54

5. Ganapati M. India has some of the highest cancer rates in the world BMJ. 2005;330:215
6. Mudur G. India has some of the highest cancer rates in the world BMJ. 2005;330:215
7. National cancer registry programme (ICMR) (2008). Consolidated Report of Population Based Cancer Registries: 2004-2005. Bangalore, India, 2008. Available from: www.ncrpindia.org/Report/PreliminaryPages_PBCR2004_2005.pdf.
8. Shunyu N B, Syiemlieh J. Prevalence of Head and Neck Cancer in the State of Meghalaya: Hospital-based Study. International Journal of Head and Neck Surgery, January-April 2013. (original article)
9. Patil VM, Noronha V, Joshi A, Agarwal J, Ghosh-Laskar S, Budrukkar A, et al Arandomized phase 3 trial comparing nimotuzumab plus cisplatin chemoradiotherapy versus cisplatin chemoradiotherapy alone in locally advanced head and neck cancer. Cancer. 2019;125:3184–97
10. Zhang FF, Cardarelli R, Carroll J, Fulda KG, Kaur M, Gonzalez K, et al. Significant differences in global genomic DNA methylation by gender and race/ethnicity in peripheral blood. Epigenetics. 2011;6:623–9.
11. Paterson IC, Eveson JW, Prime SS. Molecular changes in oral cancer may reflect aetiology and ethnic origin Eur J Cancer B Oral Oncol. 1996;32:15–3
12. Khongsti S, Shunyu BN, Ghosh S. Promoter-associated DNA methylation & expression profiling of genes (FLT 3, EPB41L3 & SFN) in patients with oral squamous cell carcinoma in the Khasi & Jaintia population of Meghalaya, India. Indian J Med Res. 2019 Dec;150(6):584-591. doi: 10.4103/ijmr.IJMR_620_18. PMID: 32048621; PMCID: PMC7038811.
13. Lohia N, Bhatnagar S, Singh S, Prashar M, Subramananiam A, Viswanath S, et al Survival trends in oral cavity cancer patients treated with surgery and adjuvant radiotherapy in a tertiary center of Northern India: Where do we stand compared to the developed world? SRM J Res Dent Sci. 2019;10:26–31
14. Kekatpure V, Kuriakose MA. Oral Cancer in India: Learning from different populations. National newsletter and website from New York Presbyterian Hospital 2010;14. Available from: http://www.nypcancerprevention.com/issue/14/cancer_prevention/ feature/india.shtml.
15. Mishra A, Singh VP, Verma V. Environmental effects on head and neck cancer in India. J Clin Oncol 2009;27 (suppl; abstr e17059).
16. Adelstein D. Gillison M.L. Pfister D.G. et al. NCCN guidelines insights: head and neck cancers, version 2.2017.J Natl Compr Canc Netw. 2017; 15: 761-770

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Accessibility – A step Towards an Inclusive society

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In 2015, the United Nations witnessed a momentous gathering of world leaders and the making of a historic promise to secure the rights and well-being of everyone on a healthy, thriving planet. In that meeting 17 Sustainable Development Goals (SDGs) were set as a part of the 2030 Agenda for Sustainable Development. This agenda paved the path for ending poverty, protecting the planet and tackling inequalities, aiming to leave no one behind. This pledge to "leave no one behind," is an ambitious plan of action of the international community towards a peaceful and prosperous world. Here, the dignity of an individual and equality among all has been regarded as a fundamental principle. Thus, it follows that this principle must be inclusive of persons with disabilities, who constitute 15% of the world population.

To examine disability and the Sustainable Development Goals (SDGs) of the 2030 Agenda for Sustainable Development at the global level, in 2018 the United Nations launched its flagship report on disability and the Sustainable Development Goals, the Disability and Development Report on the "Realization of the Sustainable Development Goals by, for and with persons with disabilities". Subsequently, in

December 2019, UN General Assembly adopted two resolutions "Promoting social integration through social inclusion" and "Implementation of the Convention on the Rights of Persons with Disabilities and the Optional Protocol thereto: accessibility". The latter resolution emphasized that accessibility is a precondition for persons with disabilities to live independently, participate fully and equally in all aspects of life and fully enjoy all their human rights. United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) in its article 9 states about the accessibility and recommends appropriate measures to enable persons with disabilities to live independently. India being a signatory to UNCRPD, ratified the said Convention on the 1st of October 2007 and for implementation of the same, Rights of Persons with Disabilities Act was enacted by Parliament in 2016. The act states accessibility requirements and responsibilities of governments and other authorities.

India, with its vast population and diverse landscape, is home to millions of people with disabilities. According to the 2011 Census, approximately 2.21% of the Indian population is disabled, which translates to about 26.8 million people. However, this number is likely underestimated, with various reports suggesting a significantly higher figure. Despite significant challenges posed by diverse landscape and other barriers, India has made several strides towards improving accessibility for disabled individuals. However, significant challenges remain, and many disabled people still face substantial barriers in their daily lives. India has a comprehensive legal framework aimed at protecting the rights of disabled individuals. The Rights of Persons with Disabilities Act, 2016 (RPWD Act) is the cornerstone of this framework. The Act mandates that public buildings, transportation systems, and information and communication technologies be made accessible to persons with disability. Despite such strong legislation, implementation is inconsistent across the country. Many public and private institutions have not fully complied with the accessibility requirements set forth in the RPWD Act. There is a need for stringent enforcement mechanisms and regular monitoring to ensure compliance. Moreover, the lack of awareness and training among implementing authorities further hampers the effective execution of the laws.

Persons with disability face difficulties in accessibility from physical infrastructure, digital accessibility, education, employment, healthcare, and even social attitudes. Among these, physical infrastructure poses as the major accessibility issue in living independently, participate fully and equally in all aspects of life. Despite the fact that accessibility issues in physical infrastructure is most obvious, a significant portion of public buildings, including government offices, schools, hospitals, and recreational facilities, remain inaccessible to disabled individuals. Many buildings lack basic accessibility features such as ramps, elevators, tactile paths, and accessible restrooms. The Accessible India Campaign (Sugamya Bharat Abhiyan) launched in 2015 aims to make public buildings more accessible. Public transportation systems, including buses, trains, and metro services, generally lack adequate facilities for persons with disability. While some progress has been made, such as the inclusion of ramps and reserved seating in some metro cities, most public transport options remain inaccessible. This severely limits the mobility of disabled individuals and their ability to participate fully in society.

Digital accessibility is one of the essential components one's life. However, it is a significant challenge for PWDs in India. Many websites, including those of government

services, banks, and educational institutions, do not comply with Web Content Accessibility Guidelines (WCAG). As a result, visually impaired and other disabled individuals face difficulties accessing essential information and services online. Similar to websites, mobile applications often fail to include accessibility features such as screen readers, voice commands, and easy navigation options. This digital divide exacerbates the exclusion of PWDs from the digital economy and services. There have been some initiatives to improve digital accessibility. For instance, the Ministry of Electronics and Information Technology (MeitY) has issued guidelines for developing accessible websites and apps. However, the adoption and enforcement of these guidelines are still lacking, leading to a digital divide.

Access to education is a major concern for PWDs as many educational institutions in India are not equipped to accommodate these students. Schools and universities often lack accessible classrooms, libraries, and restrooms. Additionally, learning aids such as Braille books, audio-visual materials, and assistive technologies are not widely available. There is a significant gap in the training of educators to support students with disability. Many teachers are not equipped with the skills or knowledge to create an inclusive learning environment. This results in these students being marginalized and often dropping out of school. The Right to Education Act mandates inclusive education, but its implementation is patchy. Special schools and resource centers exist, but mainstream schools need to be better equipped to include disabled students effectively.

Access to employment for PWDs is also a cause of concern. Many workplaces in India are not designed to accommodate PWDs, like lack of accessible infrastructure, ergonomic workstations etc.

Many healthcare facilities are not accessible to PWDs for similar aforementioned infrastructural issues. Additionally, there is a lack of training among healthcare professionals to address the specific needs of disabled patients. The rise of telemedicine has provided an alternative means of accessing healthcare but ensuring that telemedicine platforms are accessible and that healthcare providers are trained to offer remote consultations effectively remains a challenge.

Social and attitudinal barriers create a major obstacle toward the accessibility for PWDs. PWDs in India face significant social stigma and discrimination. Negative attitudes and misconceptions about disabilities are widespread, leading to the marginalization of individuals with disability. There is a need for greater awareness and sensitization campaigns to educate the public about disabilities and promote a more inclusive society. These campaigns can help change negative attitudes and reduce discrimination. Encouraging the development and adoption of assistive technologies can significantly improve the quality of life for disabled individuals. Innovations such as screen readers, hearing aids, prosthetics, and mobility devices can enhance accessibility and independence.

Addressing accessibility issues for disabled people in India requires a multifaceted approach. Legislative measures, improved infrastructure, digital inclusivity, education, employment opportunities, and healthcare access must be prioritized. Changing societal attitudes and increasing awareness are equally important. With concerted efforts from the government, private sector, and civil society, India can move towards becoming a truly inclusive society where disabled individuals can lead dignified and independent lives.

INIs like ours can set an example and lead the way by effectively addressing the issue of accessibility for persons with disability.

References:

1. Transforming our world: the 2030 Agenda for Sustainable Development. Available at: https://undocs.org/en/A/RES/70/1
2. Accessibility and Development. Available at: https://www.un.org/disabilities/documents/accessibility_and_development.pdf
3. Implementation of the Convention on the Rights of Persons with Disabilities and the Optional Protocol thereto: accessibility. Available at: https://undocs.org/A/C.3/74/L.32/Rev.1
4. RPWD Act, 2016. Available at: https://cdnbbsr.s3waas.gov.in/s3e58aea67b01fa747687f038dfde066f6/uploads/2023/10/202310161053958942.pdf

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Scenario of Health-oriented Research in India: Past, Present and Future

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Health-oriented research forms the backbone of health-care system of any nation. During the last few decades, the technological advances have revolutionized the healthcare system across the globe. The impact of research on health-care system can be envisioned from the fact that the life expectancy in almost every country has increased in recent years. For example, the life expectancy was reported to be 66.8 years and 73.4 years in 2000 and 2019, respectively [1]. This has necessitated to remove old-age and life-style associated diseases from the overall life expectancy. India is reported to conduct only 1.4% of global health research even though it represents 17.5% of the world population [2]. The history of health-oriented research in India dates back to the pre-independence period when the country was grappled with diseases like cholera, malaria, and tuberculosis. This led to the establishment of health research Institutes such as the Indian Council of Medical Research (ICMR) in 1911. The early efforts of ICMR were focused on combating infectious diseases prevalent at the time. With 26 national institutes and 6 regional medical research centers, ICMR currently focusses on health topics such as cholera and diarrheal diseases, food and drug toxicology, immuno-hematology, kala-azar, leprosy, malaria, medical statistics, nutrition, oncology, reproduction, tuberculosis, vector control, viral diseases, etc. The All India Institute of Medical Sciences (AIIMS), New Delhi (established in 1956) is one of the premier medical institutions in the country [3]. As of now, there are 26 AIIMS in the country, some of which are at early stages of establishment. These Institutes are likely to generate enormous clinical material that can be used for discoveries and to learn about diseases unique or most prevalent in India. In the 20th century, multiple other research Institutes were established although health-oriented research has been only one of many other domains of their mandate. Notable among these are Department of Biotechnology (DBT) with 16 institutes, Council of Scientific and Industrial Research (CSIR) with 37 institutes, Indian Institute of Technology with 25 institutes, and Department of Science and Technology (DST) with 20 Institutes. In addition, Indian Institute of Science, Bengaluru; Indian Institutes of Science Education and Research (IISER) with 7

Institutes; National Institute of Pharmaceutical Education and Research (NIPER) with 7 Institutes; and 56 central universities are also involved in health-oriented research. These Institutes are spread all over the country.

During the mid-20th century, significant progress was made in understanding the causes, pathogenesis and management of infectious diseases. One such landmark example is the National Malaria Control Programme, launched in 1953. Research efforts led to the development of strategies for vector control and treatment, significantly reducing malaria incidence in the country. Similarly, the National Tuberculosis Programme (initiated in 1962), has been pivotal in controlling TB in India. Despite these successes, the country has witnessed several challenges that includes limited resources, inadequate infrastructure, and a shortage of trained researchers. As per UNESCO INSTITUTE OF STATISTICS (June 2020), there are 252.7 researchers per million people in India which is far less as compared to other nations such as Denmark (8065.88), South Korea (7980.39), Sweden (7536.47), and Austria (5733.07). India spends around 0.64 % of its GDP on R & D which is again less than Israel (4.95%), South Korea (4.82%), Sweden (3.33), and Japan (3.25%). In 2015, 1,423 international patents were filed in India which is again less than what is reported in Japan (44,235), China (29,846), and South Korea (14,626).

The challenges provide a roadblock to the overall growth of the health research and apparently the growth of the nation. The Indian scientists have been doing very well overseas and are making us proud [4]. However, the same scientists are not able to deliver with the same pace after returning back to India partly due to aforesaid challenges. Nevertheless, India's health research landscape has evolved significantly in recent years. The mandate of the AIIMS is to be involved in the health-oriented research in addition to quality medical education, and evidence-based patient care. AIIMS Delhi has been serving as a role model for other AIIMS and medical Institutes in the country. It is expected that AIIMS will become the pillar of health research in the country in the coming years. The collaborative efforts with international bodies, such as the World Health Organization (WHO) and the Bill & Melinda Gates Foundation, have enhanced the research capabilities of the country. Public-private partnerships have also emerged, fostering innovation and research. In recent years, there is a growing emphasis on non-communicable diseases (NCDs) such as cancer, cardiovascular diseases, diabetes, and neurological diseases. The integration of technology in health research has opened new avenues of investigation. For example, the aim of the National Digital Health Mission (NDHM) is to digitize health records that have facilitated data-driven research. The technological advances have produced newer diagnostic tools, imaging techniques, newer drugs, and surgical modalities.

The health-oriented research in India can be further fostered by addressing current challenges. For this, priorities should be given on key areas such as: (i) enhancing research infrastructure, (ii) promoting multidisciplinary research, (iii) strengthening regulatory frameworks, (iv) fostering international collaboration, (v) strengthening public-private partnerships, (vi) strengthening capacity building and human resource development, (vii) emphasizing preventive and community health research, and (viii) leveraging digital health and big data.

An emphasis should be given in establishing state-of-the-art infrastructure and upgrading existing facilities. More research institutions should be established in underserved areas with a focus on local health issues. This will decentralize research efforts and promote inclusivity. An emphasis should also be given on holistic health solutions through multidisciplinary research by integrating fields like biotechnology, nanotechnology, OMICS, data science, artificial intelligence, robotic

technologies, and social sciences. For example, the combination of epidemiology with environmental science can offer insights into disease patterns influenced by climate change. Similarly, efforts should be given in integrating modern medicine with our traditional medicine system such as **A**yurveda, **Y**oga and Naturopathy, **U**nani, **S**iddha, **H**omeopathy (**AYUSH**). Collaborations between departments like clinical, basic science and AYUSH will help in producing scientific evidence for traditional medicine systems. In this context, establishment of department of AYUSH in AIIMS is a welcome addition. Similarly, the MOU of AIIMS Guwahati with IIT Guwahati, and NIPER Guwahati is a significant step for facilitating interdisciplinary research.

The regulatory frameworks should be reformed to make them more conducive for research while maintaining ethical standards [5]. Simplifying approval processes in the submission and management of research projects will remove inhibition for research that may eventually lead to innovation. Further, clear guidelines for ethical conduct and ensuring strict adherence can enhance the credibility of research. Almost everyone is born with the qualities of a researcher, *i.e.*, the curiosity to explore the nature and ask questions. The students should be taught about the significance of research from school days. The faculty should be mandated to spend 2-3 hours of their working hours in research. The specialized training programs with research fellowships and creating career pathways in health research will attract and retain talent. The students should be encouraged to come up with publications based on their own research and not based on what others have done. Collaborations with international institutions for training and skill development should be encouraged. In this context, AIIMS Guwahati is already making international collaborations which is a welcome step; a few faculty members are already involved in such activities. More focus should be given on preventive over curative research. The use of artificial intelligence and machine learning is also expected to enhance the research capabilities of the country.

In conclusion, the journey of health-oriented research in India is a reflection of progress with challenges and opportunities. From combating infectious diseases in the past to addressing the present burden of non-communicable diseases, India's health research landscape has come a long way. The future holds promise, with opportunities to enhance infrastructure, foster collaboration and innovation, and address emerging health issues. By investing in research, and ensuring ethical and quality standards, India can pave the way for a healthier future for its population and contribute significantly to global health advancements. Research activities should be taken as an investment and not as a non-profitable activity. It is expected that by providing academic liberty, adequate funding, and well-planned career pathways, more faculty and students will be motivated for research.

References

1. Kapoor MC. Types of studies and research design. Indian J Anaesth 2016; 60:626-30.
2. Burt T, Sharma P, Dhillon S, Manchanda M, Mittal S, Trehan N. Clinical research environment in India: Challenges and proposed solutions. J Clin Res Bioeth 2014; 5:1-8.
3. Banerjee A. Medical research in India: Spirit is unwilling and the flesh is weak. Med J DY Patil Univ 2017; 10:399-400.
4. Ahuja M, Pradeep Y. Medical research in India: Let us plug the holes! J Mid-life Health 2023; 14:63-5.
5. Lakhotia SC, Anand A. Excellence in medical research – Can we make it in India? Ann Neurosci 2015; 22:55-7.

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Becoming a humane doctor through self-reflection.

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Introduction:

As the Socrates saying "The life which is unexamined is not worth living" goes, self-reflection helps one gain insight and grow understanding of both the self and the situation, leading to informed decisions. As health professionals, ability to apply self-reflection assumes even greater importance, be it in doctor-patient relationship, or inter-personal relationships within workplace.

Expressing care, kindness, compassion, empathy and sympathy, especially towards those who are distressed, is considered a "humane act". Naturally, these attributes are desired of any doctor. Professionalism in medical care stands on four pillars – Excellence, Humanism, Accountability and Altruism which ingrains all the above attributes.

A medical professional is in a higher pursuit of healing and saving lives, giving him a "Godly" status in the eyes of the society. But doctors have now become like fallen angels. Self-reflection is the only way to explore the reasons for this transition, improve professional competence and help our profession to regain its glory.

Charles Darwin's 'Survival of the fittest' details how animals in the wild must brave the natural elements with just their sheer muscle strength and instincts, for survival and avoiding extinction. In the process of emulating this approach for pursuing their life goals, doctors seem to have lost humane aspects that used to be a part of their practice. As our perceptions change over time with our new learnings, we develop certain behaviors and attitude in our practice. Before entering medicine, what was our perception of a doctor's role? What or who had influenced in creating that image of a doctor in us? How did our perception change over time with our real-world experience as medical students, as doctors and as medical teachers? Reflecting on these questions might help us find a way to do justice to the role as doctors.

Opportunities for Reflection

- The reflection that takes while teaching is referred to as "Reflection-in-Action" (e.g. Reflecting during the class/event/act)
- The reflection that takes place after teaching is known as a "Reflection-on-Action" (e.g. reflection later after the class/event/act)

Why is it important to be a reflective practitioner?

Reflection is a core skill needed in medical practice, enabling us to cope with the ever-changing work environment, hence the efforts to integrate it into the undergraduate and postgraduate curriculum. Ronald M Epstein wrote, "Reflection and self-awareness help physicians to examine belief systems and values, deal with strong feelings, make difficult decisions and resolve interpersonal conflict."

Most doctors value opportunities to reflect on a patient's care with colleagues and to discuss areas of work that they are finding difficult. This emphasis on reflection is not new, philosophers like George Santayana have long advocated reflective thought.

The pursuit of our personal and professional goals in life are driven by certain intrinsic and extrinsic motivating factors. According to Maslow's hierarchy of needs (Fig 1, right side), the lowest form of motivation is **physiological** needs like food and water. Next comes **safety** (job security, conducive work environment) and

social need (bonding and a sense of belongingness). The next level of motivation comes from **esteem,** referring to the desire of being respected by one's peers, feeling important, and being appreciated. The highest form of motivation for an evolved thinker however is to "become what he is capable of", known as **self-actualization**. It cannot be achieved without self-reflection and critical thinking. Hence, it's right to say that self-reflection is the tool to help us navigate towards our higher goals, making its incorporation in medical education necessary.

All the lower levels of motivation (Fig1) are externally derived implying that they are neither constant nor dependable, whereas self-actualization (highest level) comes from within, indicating that is its both constant and dependable. So, we can reflect to know what our current motivation in our professional role is and how they influence our behavior and if that behavior aligns with our expected role.

Although the medical curriculum recommends incorporating reflective practice to develop higher thinking ability in the students, it is to be borne in mind that critical thinking can neither be taught passively in a classroom nor acquired automatically or subconsciously. It depends on the individuals' commitment to become a critical thinker.

A medical teacher is a lifelong learner and have had reached various level of self-reflection. A reflective teacher:

(1) consider it important for their students to learn by investigating and structuring things themselves.
(2) have themselves previously been encouraged to structure their own experiences and problems.
(3) have strong feelings of personal security and self-efficacy
(4) appear to talk or write relatively easily about their experiences

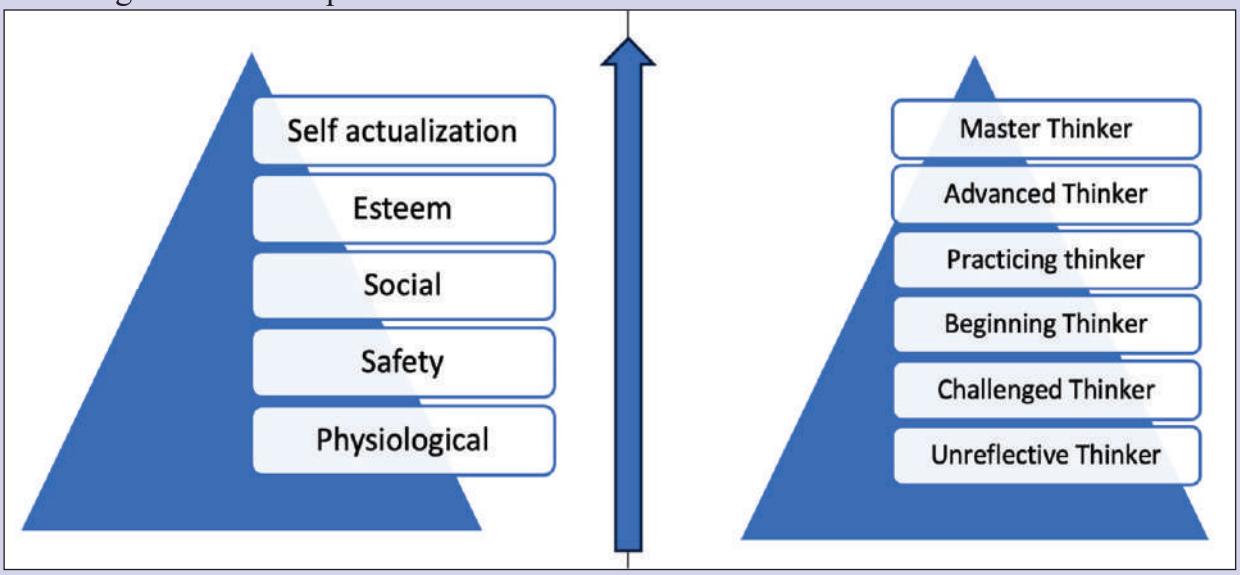

Fig1: Levels of Maslow's Hierarchy of Needs (left) and Stage Theory of Critical Thinking Development

How do you identify a reflective practitioner?

1. Inquisitive: childlike curiosity; they are eager to learn.
2. Resilient: remains calm and confident in the face of doubt.
3. Seek simplicity avoids unnecessary complexities and knows how to seek the core knowledge and skills.

4. Open-minded: Value ambiguity and not bound by unfounded assumptions.
5. Attention to detail: Power of noticing what may be new.
6. Thoughtful and humble
7. Learn ceaselessly
8. Embrace failure as a mentor

Most health professionals graduate as unreflective thinkers. Many valuable skills are inconsistently applied by such doctors because of the lack of self-monitoring of thought; prejudices and misconceptions constitute the main reasons for this. Reflection encourages looking at issues from different perspectives and help in understanding the issues and scrutinizing our own perspectives.

Factors which facilitate reflective practice

- A collaborative learning approach
- A safe, supportive, and blame-free environment
- Reflecting with more experienced people and facilitators

When to practice reflection?

Reflective practice is now established as a valid method of teaching and learning. It is a skill which facilitates the development of insight and understanding, transforming the learner and guiding future practice.

Reflection is a meta-cognitive process. In fact, metacognition is the skill that differentiates humans from animals. Metacognition is being aware of thinking about one's thinking. i.e. What are we thinking? Why are we thinking about it? It is a way of critical analysis which involves understanding a) one's thinking and learning and b) oneself as a thinker and learner. The way we perceive these realities have an impact on our response to situations. The learner is in control of what they want to keep and what to discard.

Development of clinical competence is an invaluable part of medical education and is routinely assessed. A clinically competent doctor with reflective skills adds value to his/her reflections. Reflective practitioners engage in a continuous cycle of self-observation and self-evaluation to understand their own actions and the reactions they prompt in themselves and in learners. The goal of reflection is not necessarily to address a specific problem, but to observe and refine practice in general on a regular basis. Fig 2 provides a framework which can be used to assess level of reflection a learner has reached.

Fig 2: Level of competence in reflective practice:

There are various ways to assess the level of self-reflection one has achieved: Critical Incident Analysis, Reflective Report, Reflective Journal or Learning Log, Case Study, Demonstrating Professional Attributes through real world experiences. Various theoretical frameworks like the 'Experience Reflection Action Cycle', 'Driscoll's What Model', 'Kolb's Experiential Learning Cycle' and 'Gibb's Reflective Cycle' are also useful in this connection. Collecting anonymized reflective pieces from doctors and using academic research are of immense use in explaining and analyzing experiences, contextualizing them and making decisions.

Reflective writing is personal, less formal, and often written in the first person. It expresses real-world experiences and detail feelings and perceptions which are difficult to scientifically characterize. There's also a critical component of reflection. Few of the questions of self-reflection are: Why is that significant? How is it relevant? How do I know that? What makes me think that? What do I mean by that? Why did that happen? What explains that? Am I sure of that? How else could I see it?

Can self-reflection be used to avoid or resolve conflicts?

Resolving conflict among adults is not so easy as it is children. The latter simply involves approaching parents (guardian/authority) who would discipline them. However, to resolve conflicts among adults, there is a need for sincere self-reflection and appropriate communication. Unresolved conflicts at any workplace threaten the positive work culture and create a toxic work environment. Conflicts defeat the purpose of an organization and prevent it from achieving its goals. The respect of others and building a community of practice not only bring job satisfaction but also greater sense of wellbeing.

To conclude, reflection is an ongoing process, contributing to continuous improvement and self-awareness in medical practice. Reflection leads to growth of the individual – morally, personally, psychologically and emotionally as well as cognitively. There is a bigger responsibility on the shoulders of today's doctors – to defeat diseases and attain lost glory of this profession.

"The more reflective you are, the more effective you are."

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Viking Disease in Northeast Indian population!!! A Case report

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INTRODUCTION:

Viking disease, also known as Dupuytren's contracture is a condition, where there is abnormal myo-fibroblastic growth in the hand, predominantly composed of type III collagen with sometimes fingers become permanently bent in a flexed position.[1,2] As the disease was often recorded in Nordic descent populations, it

is referred to as "Viking disease." The incidence in Norway is about 30% of men over 60 years of age. The prevalence of Dupuytren disease in the world is found as 8.2% (95% CI 5.7–11.7%). [2] In Viking disease, there are various treatment options are available like needling, injections (steroid, collagenase), different surgical procedures (for advanced diseases mainly) etc.[3]

OUR CASES:

Surprisingly we used to get lots of Dupuytren's contracture in our plastic surgery OPD in AIIMS-Guwahati. We have operated two cases here in last few months and few are waiting for surgery.

Case-1:

A 67-year non-diabetic male patient presented to plastic surgery OPD with complain of tightness and bending of ring finger and on examination there was fibrotic band present over left-hand palm extending to the middle phalange of ring finger with flexion contracture of the ring finger at PIP, DIP and MCP joints. Table top test was positive along with restricted range of motion. Open limited fasciectomy under regional anaesthesia was done with complete excision of the fibrous cord till MP joint. Careful dissection is done and neurovascular bundle is preserved. Z-plasty of skin edges done. Full straightening of the finger is achieved. Wound closed in single layer. Splint applied with bulky dressing.

Case 2:

Second case is a 65 years old non-diabetic patient with a 10 years history of feeling chord like extensions in both the hands and more severe in the right palm and for last 2-3 years there is severe restriction of movements of the fingers at right hand. Open limited fasciectomy was done for right ring and little finger similar to the previous case. Full straightening of the fingers can be achieved in right hand along with improvement in range of movements.

Pic-1: First patient with fibrotic band present over left-hand palm extending to the middle phalange of ring finger with contracture of the ring finger (PIP, DIP and MCP were flexed)

Pic-2: Chord is delinated and excised.

Pic-3: Post operative period with full extension of the ring finger.

(* Informed consent has been taken from the patient in the proper format for all the procedures and publishing data for educational purpose)

Pic-4: Second case with chord like extensions in both the hands and more severe in the right palm with severe restriction of movements; intra-operative and post operative pictures.

References:

1) Fitzpatrick's dermatology in general medicine (6th ed.). New York [u.a.]: McGraw-Hill. 2003. p. 989. ISBN 978-0-07-138076-8.

2) Salari N, Heydari M, Hassanabadi M, Kazeminia M, Farshchian N, Niaparast M, Solaymaninasab Y, Mohammadi M, Shohaimi S, Daneshkhah A. The worldwide prevalence of the Dupuytren disease: a comprehensive systematic review and meta-analysis. J Orthop Surg Res. 2020 Oct 28;15(1):495. doi: 10.1186/s13018-020-01999-7. PMID: 33115483; PMCID: PMC7594412.

3) Hurst L; Dupuytren's contracture; Greens operative hand surgery 6th edition; part II (hand); chapter 5.

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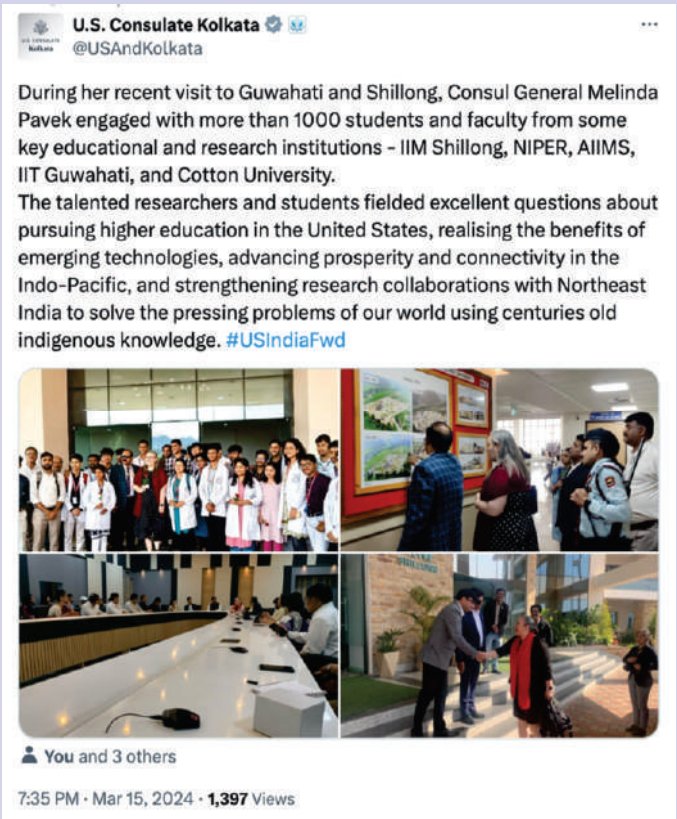

Top: World Environment Day; Down Left: Indian classical music event, in collaboration with SPICMACAY; Down right: World Earth Day

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