



Editorial

Challenges in Indian Neurosurgical Education and Infrastructure: A Call for Strategic Reforms

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Indian J Neurosurg 2024;13:189.

The landscape of neurosurgery in India represents a complex tapestry of remarkable achievement and critical challenges. Rooted in a rich legacy pioneered by visionaries like Dr. Ramamurthi, the field has evolved significantly over decades, with prestigious institutions such as NIMHANS, AIIMS, and PGIMER, Chandigarh, establishing world-class standards for medical education and clinical practice.

The current neurosurgery training program offers a comprehensive educational journey, typically spanning 3 to 6 years. Residents receive an intricate blend of theoretical knowledge and practical skills, gaining exposure to a diverse range of neurosurgical procedures. Recent innovations, particularly simulation-based training, have enhanced the learning experience by providing controlled environments for skill development and refinement.

Despite these advances, significant systemic challenges persist in neurosurgical education. Many training programs fail to provide holistic exposure across critical neurosurgical domains. Graduates often lack comprehensive training in essential areas such as neurotrauma, which constitutes over 50% of neurosurgical practice, as well as critical subspecialties including neuro-oncology, vascular neurosurgery, and spine and peripheral nerve interventions.

The professional landscape presents additional complexities. Over 500 qualified neurosurgeons graduate annually, yet the healthcare system struggles to provide meaningful employment and opportunities for skill consolidation. This gap frequently forces recent graduates into premature private practice or corporate roles, leading to insufficient skill development and potential early professional burnout. The gap in demand versus supply is resulting in a brain drain due to the recent graduates being unable to secure necessary employment opportunities.

Addressing these challenges requires a multifaceted approach. Medical colleges must create structured

positions for recent graduates, including chief resident roles, contract faculty positions, and extended training programs. Infrastructure should be available across the medical colleges and the remuneration should be competitive so as to attract the professionals. The infrastructure at medical colleges needs to be improved to allow standard neurosurgical care. Institutions should also establish stringent criteria for neurosurgery seat allocations and develop robust mentorship frameworks during the residency program that ensure comprehensive training across all neurosurgical subspecialties.

Technological innovations offer promising solutions to current limitations. Telemedicine, mobile surgical units, and targeted outreach programs can help bridge healthcare disparities between urban and rural regions. The integration of emerging technologies like artificial intelligence, robotics, and minimally invasive techniques presents transformative opportunities for the field.

The future of neurosurgical training in India demands collective commitment from educational institutions, healthcare administrators, and practicing professionals. By reimagining professional ecosystems and embracing innovative educational strategies, we can cultivate a generation of highly skilled neurosurgeons prepared to meet the complex healthcare needs of our diverse population.

Ultimately, the path forward requires a delicate balance between preserving the rich traditions of medical education and adapting to rapidly evolving technological and clinical landscapes. Continued international collaborations, strategic investments in training infrastructure, and a holistic approach to professional development will be critical in positioning Indian neurosurgery as a global leader in medical excellence.

Conflict of Interest

None declared.

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DOI <https://doi.org/10.1055/s-0044-1801370>.
ISSN 2277-954X.

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