Bridging the Neurosurgical Gap in Nepal

Prakash Kafle

Head Department of Neurosurgery, Nobel Medical College Teaching Hospital Biratnagar, Nepal

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Editorial

The field of neurosurgery has witnessed remarkable advancement over the past decades. From minimally invasive and endoscopic procedures to Neuronavigation, artificial intelligence, and precision microsurgery, modern neurosurgical care has evolved dramatically. Yet, despite these scientific achievements, access to timely and affordable neurosurgical care remains a major challenge in many low- and middle-income countries (LMICs)[1].

Globally, neurological disorders contribute significantly to mortality and disability. Traumatic brain injury, stroke, hydrocephalus, spinal disorders, congenital anomalies, CNS tumours, and vascular pathologies collectively impose an enormous burden on healthcare systems. Unfortunately, the distribution of neurosurgical resources remains highly unequal. The Lancet Commission on Global Surgery emphasized that millions of patients worldwide still lack access to safe, timely, and affordable surgical care1.Neurosurgery remains among the most resource intensive and workforce dependent specialties, making disparities even more pronounced in developing nations[2].

Nepal has made notable progress in neurosurgical development during the last two decades. Neurosurgical services, once limited to Kathmandu and limited major cities like Chitwan Biratnagar, are now gradually expanding across different provinces and city. The increasing number of trained neurosurgeons, medical colleges, and tertiary care centres represents an encouraging transition in national healthcare capacity. Recent studies have demonstrated significant improvement in neurosurgical workforce density in Nepal, with services now available in all seven provinces of Nepal [3-4].

However, the existing progress should not obscure the reality that major inequities persist. More than half of the country's neurosurgical workforce still remains concentrated in urban centres, while large rural populations continue to face delayed referrals, inadequate transportation, financial hardship, and limited access to specialized care. In neurotrauma particularly, delays in diagnosis and intervention often determine survival and neurological outcome. Time-sensitive conditions such as extradural hematoma, aneurysmal subarachnoid haemorrhage, acute hydrocephalus, and spinal cord compression require systems capable of rapid recognition and referral to Neurosurgical centre. Unfortunately, such systems remain inconsistent across many regions of Nepal[5-6].

Another major challenge is the disparity in infrastructure and equitable distribution of advanced neurosurgical services. Although Nepal has made remarkable progress and now possesses several modern neurosurgical technologies and capabilities comparable to international standards including endoscopic brain and spine surgery, advanced microsurgical procedures, intraoperative neuromonitoring, skull base surgery, and neurocritical care these facilities remain concentrated within a limited number of tertiary centers[3,4 &7–10] . Consequently, a large proportion of the population, particularly from rural and underserved regions, continues to face difficulty accessing timely specialized neurosurgical care. This imbalance is influenced not only by resource and stakeholder limitations but also by inadequate public awareness regarding neurosurgical and neurospinal diseases, often resulting in delayed presentation and referral. True advancement in neurosurgery should therefore be measured not merely by the availability of sophisticated technology, but by how equitably and effectively these services reach the broader population. Sustainable progress in neurosurgery requires not only skilled surgeons but also trained nursing staff, neuroanesthesia, rehabilitation teams, intensive care support, and affordable technology.

Workforce development also deserves urgent attention. Nepal has witnessed encouraging growth in neurosurgical residency programs and academic publications. Nevertheless, the current workforce remains insufficient for the nation's growing burden of neurological disease. Global neurosurgical estimates suggest that millions of essential neurosurgical cases remain untreated annually due to workforce deficits[2&5]. Continued expansion of residency training, subspecialty exposure, research culture, and regional academic collaboration will be critical for future sustainability.

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Address for correspondence:
Prof. Dr. Prakash Kafle MS, MCh Neurosurgery
Head Department of Neurosurgery, Nobel Medical College Teaching Hospital Biratnagar, Nepal
Email: prakashkaflee@gmail.com

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Importantly, the future of neurosurgery in Nepal should not merely focus on increasing numbers but on ensuring equitable access. Telemedicine, digital imaging transfer though it's in use in some centre in Nepal, artificial intelligence-assisted triage, and regional referral networks may help bridge geographical barriers. Public private academic partnerships can further strengthen trauma systems and emergency neurosurgical coverage in underserved regions.

As neurosurgeons, our responsibility extends beyond the operating room. We must actively contribute to policy advocacy, training, public awareness, and system strengthening. Neurosurgical care should not remain a privilege available only to those living near major cities. Equity in neurosurgical access is no longer an aspiration it is a necessity.

Nepal stands at an important phase in its neurosurgical journey. The progress achieved thus far is commendable, but the next challenge lies in transforming isolated excellence into a coordinated national system capable of delivering timely, safe, and affordable neurosurgical care to all citizens. The future of neurosurgery in Nepal will ultimately be measured not only by technological advancement, but by how effectively we reach the patients who need us most.

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