World Brain Day 2020 – Challenges and Opportunities in India

Neurological disorders have become major public health concerns globally including India, with increasing prevalence due to escalating longevity and perpetually changing lifestyles. Brain diseases, along with mental disorders and substance abuse, cause more morbidity and mortality than cancers and heart diseases combined. The key to improvement is creating awareness, leading to timely diagnosis and treatment.

There has been a 44% increase in mental, neurological, and substance use disorder burden from 1990 to 2013 in India, by far exceeding many other Asian countries.[1] This burden is estimated to increase further by 23% in India by 2025, which should ring alarm bells to the medical community.[1] With 9 million deaths and 16.5% of total global deaths, neurological disorders are the second leading cause of death after heart disease and with 276 million and 11.6% of global disability-adjusted life years (DALYs), the leading cause of disability.[2] The prevalence in India is reported to be as high as 2400 per lakh population.[3] India is home to 10 to 12 million people with epilepsy with wide treatment gaps.[4] Similarly, a 100 percent increase in stroke prevalence in low and middle- income countries (LMIC) including India has been reported in the past two decades, and only about 10% of stroke patients get thrombolysis in the first 4.5 hours.[5] Likewise, India has nearly 10 lakh patients with Parkinson's Disease (PD).[6] These figures seem to be underreported due to the heterogeneity of our population, lack of prospective, population-based registries, and high case-fatality rates. Currently, there are fewer than 2000 neurologists in the country, leading to a staggering doctor: patient ratio mismatch. This warrants urgent prioritization of programs focused on targeted prevention and treatment. Unless preparation, planning, and urgent steps for treatment and long-term care of an increasing population of neurologically affected people are instituted, this grim situation will greatly strain India's health care system in the coming years.

The World Federation of Neurology (WFN) was established on 22nd July, 1957, as an association of National Neurological Societies. Since 2014, this day is commemorated as the World Brain Day. This year, the theme for World Brain Day is Parkinson's Disease, which affects more than 7 million people worldwide.[6] Crude prevalence rates (CPR) of 6–53/100,000 have been reported from India. Prevalence rates are higher above 60 years of age, being 247/100,000.[7] The WFN has thus very rightly adapted the theme for this year: "Move together to end Parkinson's Disease." Both medical management and rehabilitation play key roles in this regard.[8] Our mission and focus should be in line with this, not only for Parkinson Disease, but to promote and increase our resources to foster quality neurological health in India.

Stroke, another major neurological disorder, occurs in younger populations in India in comparison to western countries. While stroke incidence and mortality has been declining steadily by 30%–40% since the 1990s in high-income countries, incidence and prevalence rates in India have doubled, with high case fatality.[5] There were approximately 1.5 million new cases of stroke reported in 2010 with an estimated annual incidence rate of 145 per 100,000 population. Treatment of stroke in acute stages is time-dependent and involves exorbitant out-of-pocket expenses in private health setups. Newer treatment modalities like thrombolysis and thrombectomy are not universally available and are limited to a few centers. Stroke survivors may experience severe long-term functional residual motor disabilities along with speech and language problems, cognitive deficits, and need long-term rehabilitation. Many are not able to reintegrate into the community and account for 5 to 6 lakh people with disabilities added every year.

Dementia is another neurological giant. At present, the annual cost of dementia-related health care is estimated to be above 150 billion rupees. The geriatric population in India is likely to increase from 7.1% in 2001 to 17% of the population by 2050.[9] This will result in more than 30 crore senior citizens by 2050 with a consequent increase in dementia patients by three-fold.

With the current COVID-19 pandemic raging through the nation and the world, neurological services have received a jolt as well and have triggered additional challenges. Patients with chronic neurological illnesses such as PD and multiple sclerosis are at the receiving end, with disruption/modification of routine care.[10,11] Additionally, the neurological features of COVID-19 are seemingly myriad in range and include anosmia, ageusia, altered sensorium, dizziness, encephalitis, stroke, epilepsy as well as peripheral involvement such as Guillain–Barre syndrome, and new manifestations are continually being recognized. Age, pre-existing chronic diseases including neurological conditions, and smoking have been shown to be specific risk factors for severe COVID-19 neurological diseases. Patients with existing neurological diseases may experience the aggravation of the same.[12,13] Although the entire spectrum of acute neurological involvement in SARS-CoV-2 is rapidly coming to the forefront, whether there are any long-term neurological sequelae remains to be seen. This necessitates longitudinal monitoring of these patients since we already know that there are distinct neuroimmunological and inflammatory facets to COVID-19. The presence of olfactory involvement at the outset suggests a striking similarity with alpha synnucleinopathies such as Parkinson's Disease in which olfactory dysfunction is a premotor feature. Cellular apoptosis of the medullar respiratory and reticular systems by COVID-19 is already known.[14] Whether there is a potential for setting off neurodegenerative elements as sequelae of COVID-19 will be revealed in the times to come. Public health measures like social distancing and social isolation can also lead to deleterious effects on the elderly, especially patients with

neurodegenerative diseases, poor ambulation, and cognitive impairment thereby necessitating social cohesion while maintaining physical distancing.[15]

India has been undergoing rapid economic, demographic, and epidemiological transitions since the last few decades. Our challenges include overpopulation, lack of resources, and out-of-pocket expenses for treatment. Since there is a huge gap in the availability of neurologists, regional imbalances, and skewed ratio towards the metro cities, there is a need to incorporate neurological care within the ambit of primary care. Multiple government efforts are ongoing to combat this issue. Ayushman Bharat Yojana or Pradhan Mantri Jan Arogya Yojana or National Health Protection Scheme, launched in 2018 under the Ayushman Bharat Mission of Ministry of Health and Family Welfare, is likely to make a big difference. The Honorable Union Minister of Health, Niti Aayog, full-time member in-charge of Health and Nutrition, and Secretary, Department of Health Research are internationally renowned medical professionals, leading the nation in framing and implementing policies to overcome these challenges.

The responsibility lies with us—the medical fraternity, the scientific community, and the civil society— to create awareness about brain health, and come forward and take a pledge this World Brain Day, to assist our governmental agencies and nongovernmental organizations in providing adequate treatment and prevention of neurological disorders.

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References

1. Whiteford HA, Ferrari AJ, Degenhardt L, Feigin V, Vos T. Global burden of mental, neurological, and substance use disorders: An analysis from the Global Burden of Disease Study 2010. In: Patel V, Chisholm D, Dua T, Laxminarayan R, Medina-Mora ME, editors. Mental, Neurological, and Substance Use Disorders: Disease Control Priorities. 3rd ed.. Vol 4. The International Bank for Reconstruction and Development/The World Bank; 2016. [Last accessed 2020 Jun 22].
2. Carroll WM. The global burden of neurological disorders. Lancet Neurol 2019;18:418-9.
3. Gourie-Devi M. Epidemiology of neurological disorders in India: Review of background, prevalence and incidence of epilepsy, stroke, Parkinson's disease and tremors. Neurol India 2014;62:588-98.
4. Garg D. Specific considerations for epilepsy in India. Curr Med Issues 2020;18:105-10.
5. Feigin VL, Lawes CMM, Bennett DA, Barker-Collo SL, Parag V. Worldwide stroke incidence and early case fatality reported in 56 population-based studies: A systematic review. Lancet Neurol 2009;8:355-69.
6. de Lau LML, Breteler MMB. Epidemiology of Parkinson's disease. Lancet Neurol 2006;5:525-35.
7. Razdan S, Kaul RL, Motta A, Kaul S, Bhatt RK. Prevalence and pattern of major neurological disorders in rural Kashmir (India) in 1986. Neuroepidemiology 1994;13:113-9.
8. Garg D, Dhamija RK. Rehabilitation in Parkinson's disease: Current status and future directions. Ann Mov Disord. Accepted for publication. doi: 10.4103/AOMD.AOMD_1_20.
9. United Nations, Department of Economic and Social Affairs, Population Division. World Population Ageing, 2019 Highlights.; 2020.
10. Garg D, Dhamija RK. The challenge of managing Parkinson's disease patients during the COVID-19 pandemic. Ann Indian Acad Neurol 2020;23;S24-7.
11. Bhatia R, Padma Srivastava MV, Khurana D, Pandit L, Mathew T, Gupta S, *et al*. Consensus statement on immune modulation in multiple sclerosis and related disorders during the COVID-19 pandemic: Expert group on behalf of the Indian Academy of Neurology. Ann Indian Acad Neurol 2020;23:S5-14.
12. Toljan K. Letter to the Editor regarding the viewpoint "Evidence of the COVID-19 Virus targeting the CNS: Tissue distribution, host–virus interaction, and proposed neurotropic mechanism." ACS Chem Neurosci 2020;11:1192-4.
13. Das G, Mukherjee N, Ghosh S. Neurological insights of COVID-19 pandemic. ACS Chem Neurosci 2020;11;1206-9.
14. Li Y-C, Bai W-Z, Hashikawa T. The neuroinvasive potential of SARS-CoV2 may play a role in the respiratory failure of COVID-19 patients. J Med Virol 2020;92;552-5.
15. Gupta R, Dhamija RK. Covid-19: Social distancing or social isolation? BMJ 2020;369:m2399.

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