

Relevance of Neuroepidemiology: Burden of Neurological Disorders and Public Health Issues

India is going through a rapid phase of epidemiological transition with increase in noncommunicable diseases (NCDs), and neurological disorders form a significant proportion of NCDs.^[1,2] There is a striking variation of various health parameters and magnitude of epidemiological transition between different states and regions in India.^[1] Determination of burden of neurological disorders is the cornerstone for planning workforce requirement, creating infrastructural facilities and health needs at the local community, regional, and national level to the people affected by a variety of neurological disorders. The emerging data will be crucial for initiating neurology-related health services and for creating a competent workforce required for comprehensive management of acute and chronic neurological disorders and also rehabilitation in motor, sensory, and cognitive spheres.

The prevalence of neurological disorders is a measure of the burden while incidence study will provide the magnitude of the number of new cases in a year and will also generate important data regarding morbidity, mortality, and trend of the diseases over the period of the study. Identification of risk factors and galvanizing program for disease prevention is an important outcome of epidemiological studies. In the developed countries, neuroepidemiological studies have been done for more than 50 years; however, in India as in other developing countries, confronted with grossly limited trained workforce in neurology and scant resources, this field did not develop till the late 1960s.^[3-10] To overcome these constraints, novel two-phase strategy was developed; in the first-phase training of health workers or social workers to administer a validated questionnaire developed by the World Health Organization to screen the population and in the second-phase neurologist to examine the screened positive subjects and make a clinical diagnosis.^[3,11] This approach was effectively used in Nigeria, Mexico, and China^[3] In the Indian context, the WHO questionnaire was modified and effectively used for population-based neuroepidemiological study of urban and rural population in Bengaluru.^[12,13] Recognizing that case ascertainment and definition of common neurological disorders is of prime importance, a manual was developed by Gourie-Devi *et al.* which has been widely used by neurologists in India.^[14] The questionnaire developed by these authors has also been adapted with modifications to suit the local conditions in neuroepidemiological surveys in the country.^[15-17]

The average crude prevalence rate of common neurological disorders in India is 2394 and ranged from 967 to 4070/100000 population with higher prevalence rate in rural compared to urban population.^[2] It is emphatically stated that there

are nations within a nation in India;^[1,18] hence, it is timely that recently, a survey has been conducted in tribal region in Gujarat overcoming many unsurmountable challenges of accessibility, poor health-care facilities, inadequate awareness of the community, and the latter being an essential requisite for survey.^[17] Determination of sensitivity and specificity of the questionnaire was not possible due to a large dropout of subjects at second phase which required examination by neurologists. The authors have stated that all attempts were made to ensure good attendance but the local prevailing circumstances were the deterring factors. Despite the limitations it is noteworthy that the prevalence rate of neurological disorders of 2592/100000 in the tribal population was similar to that of general population (967 to 4070 per 100000) of India, as also the prevalence rates of epilepsy (tribal population -2.5/1000; general population 2.5 to 11.9/1000) and stroke (tribal population -109/100000; general population 52 to 472/100000).^[2] It is of immense relevance to health administrators and planners that adequate neurology services have to be provided with requisite workforce and infrastructure for the tribal population in remote areas of the country. In view of the constraints of limited specialist workforce and finances, with optimization of available resources, neurology care can be delivered through “rural model,” “community health center model,” “satellite clinic model,” and “district model” with integration of these various models through interactive methods.^[5]

M. Gourie-Devi

Emeritus Professor of Neurology, Institute of Human Behaviour and Allied Sciences, Senior Consultant Neurologist and Chairperson, Department of Neurophysiology, Sir Ganga Ram Hospital, New Delhi, India

Address for correspondence: Prof. M. Gourie-Devi, Emeritus Professor of Neurology, Institute of Human Behaviour and Allied Sciences, New Delhi, India. E-mail: mgouriedevi@gmail.com

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