Stroke Epidemic in India – Time to Prioritize Prevention Strategies

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Non Communicable Diseases (NCD) pose great health burden and presents enormous challenge for health and national economies. Stroke is the second leading cause of death after ischemic heart disease and major cause of disability worldwide (World health statistics 2011). Current data suggest that approximately 20 million people suffer from stroke each year, 5 million die and 5 million more are left with chronic disability.

In India and other developing countries, rapid demographic, lifestyle, and socioeconomic transitions have significantly contributed to the emergence of the stroke epidemic. Attributable causes are increased prevalence of hypertension (contributed by work related stress), altered food habits, aging and rising tobacco consumption. Recent data, taking account of stroke survivors and stroke-caused deaths, suggest higher stroke rates as compared to the developed nations; the prevalence rate being 545.10 per 100 000 (95% CI, 479.68 to 617.05) and annual incidence rate of first-ever stroke (FES) at 145.30 (95% CI, 120.39 to 174.74); overall 30-day case fatality being 41.08%. Another study from Mumbai stroke registry showed 28 day fatality rate of FES cases at 29.8% and 38.5% were left with moderate to severe disability.

With rising healthcare cost and failing economy, it is imperative to focus on primary and secondary prevention of stroke. Modification of risk factors itself can help achieve 2% reduction in overall stroke mortality per annum. The first significant step towards this goal is to collect census verifiable demographic data on stroke incidence and mortality to guide action. In this regard, hospital based studies have great limitations. The World Health Organisation (WHO) recommends step wise approach (STEPS stroke) using standardized methodologies followed by phased interventions.

STEPS stroke feasibility was tested in Indian Collaborative Acute Stroke Study (ICASS) conducted in major universities at seven national centres (Chandigarh, New Delhi, Mumbai, Pune, Bangalore, Chennai and Hyderabad) from 2002-2004, utilizing WHO STEP-stroke manual as operational protocol. The study included 2162 CT (computed tomography) confirmed cases of acute stroke. Results showed higher stroke incidence in age-bands of 41-70 years. Acute ischemic stroke (AIS) occurred in 77%, predominantly in males. Hypertension alone or in various combinations with diabetes and ischemic heart disease was reported as the major risk factor predisposing to stroke. Such data in well-defined segments of population are desirable and re-emphasise the need for Hypertension–Stroke Control programme.

In the current issue of JAPI, Baskar and Revathy’s data support the ICASS and other similar studies. In addition, they have shed light on issues like stroke in young perimenopausal females and impact of adverse social habits (e.g alcohol and tobacco use) in association with Type A personality. Their importance lies in the fact that nearly 18-22% of all stroke cases occurs in the vulnerable age of <45 years. Menopause metabolic syndrome adds up in creating an unfavourable cardiovascular risk profile in aging women. Cerebro-venous
thrombosis affects 95% of all women with pregnancy or puerperium related stroke.\textsuperscript{10} Personality types A and B were introduced by cardiologists in 1950's.\textsuperscript{11} They are still believed to play role in risk stratification of cardiovascular disease, but more robust evidence is needed.

While these studies increase our knowledge in stroke, the conventional risk factors play an important role. Control of hypertension, biochemical risk factors and avoiding smoking are of prime importance. It is therefore imperative to implement comprehensive approach to primordial, primary and secondary prevention.

Primordial prevention involves “improvement in socioeconomic status and literacy, adequate healthcare financing, public health insurance, smoking control policies, legislative control of saturated fats, trans fats, salt and alcohol, better urban planning and school-based and worksite interventions to encourage physical activity. Primary prevention entails change in medical educational curriculum and improved healthcare delivery for control of cardiovascular disease risk factors”.\textsuperscript{12} Secondary prevention involves optimum use of pharmacotherapy (aspirin, beta-blockers, angiotensin converting enzyme (ACE) inhibitors, and statins along with lifestyle changes). Inexpensive drugs for treatment of individuals at high risk should be made available to the poor through the government health system.\textsuperscript{13}

Secondary prevention may sometimes require surgical intervention (e.g. carotid endarterectomy and/or stenting) in subjects having recurrent TIA (Transient Ischaemic Attack) not responding to clopidogrel and aspirin therapy. For ulcerative lesions near bifurcation carotid endarterectomy is preferred whereas for flat plaque/stenotic lesions (>50%) in distal carotid, stenting may be considered.

Public awareness and health education on warning symptoms of TIA and early stroke, by optimum use of existing mass media, is of utmost importance in the success of stroke campaigns. It has been realized that warning symptoms such as headache, dizziness, difficulty in speaking or understanding speech, and altered sensorium are less commonly identified. Available evidence points that low threat perception, contact with local doctor, illiteracy, poverty, and long distance from hospital are independent factors for delay in seeking health care facility.\textsuperscript{14} The lacuna in doctors’ involvement is also responsible for low awareness on possible treatment availability.\textsuperscript{2}

At present and in absence of organized stroke care services and communication as well as transportation difficulties, patients do not reach within 4.5 hours to receive thrombolysis; only 13-15% of eligible patients are thrombolysed.\textsuperscript{15} High cost of medications (e.g. Recombinant tissue plasminogen activator (rt-PA)) and lack of medical insurance coverage are other prohibitive causes.\textsuperscript{16} We will therefore continue to face the burden of disease in form of residual disability after acute stroke.

It is thus recommended to identify stroke risk factors and address them while they are still relatively cost effective and easy to manage by comprehensive care. Mass screening surveys to identify “hypertensives” and “stroke - prone” subjects, wherever feasible, should be undertaken to prescribe simple, practical, non-costly remedies.\textsuperscript{17} National Councils to liaise between various agencies (health, industry, finance etc.) are essential to coordinate actions at all levels. To ensure long term sustainability and universal coverage of interventions, the various programme models should be based on existing public sector health system and feasible public-private partnership.\textsuperscript{18}

**Addendum**

WHO defines Stroke as “a focal (or at times global) neurological impairment of sudden onset lasting more than 24 hours (or leading to death) and of presumed vascular origin”.

The term transient ischaemic attack (TIA) implies complete recovery of such a deficit within 24 hours. Cerebral or subarachnoid haemorrhage is consequent to rupture through some acquired or inherent weakness of the vessel wall.

**References**


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