Neurology

AWARENESS OF STROKE IN THE GENERAL PUBLIC IN INDIA.

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ABSTRACT Stroke is a major neurological, non-communicable, and preventable life style disease associated with significant mortality and disability. Early recognition of symptoms of stroke and early arrival at a hospital aids in an effective stroke management. However due to lack of knowledge of symptoms of stroke and poor emergency response, many stroke patients do not reach the hospitals within this golden period of time. Accurate knowledge about stroke risk factors and warning signs, right attitude and proper practices of stroke prevention will reduce the incidence of stroke. It is important to assess the awareness regarding symptoms of stroke, their attitude and practices to reduce incidence, mortality-morbidity of stroke in the general public. In case of inadequate knowledge among the general population, governmental and non-governmental efforts to empower people with adequate knowledge will be necessary. Understanding the knowledge gaps and level of awareness will help us to develop appropriate health screening camps and awareness programs for general public. In the present article we review the awareness of stroke amongst the general public in India.

KEYWORDS : Stroke, risk factors, awareness, general public

INTRODUCTION

Stroke is a major neurological, non-communicable, and preventable life style disease. It is the most common cause of mortality and a significant cause of adult disability (S. K. Das et al., 2007; Murray & Lopez). Stroke may cause cognitive impairment, mood changes, reduced efficiency of work directly or indirectly due to compromised functional abilities and thus results in poor quality of life (S. Das et al., 2010; S. K. Das et al., 2007; Gupta et al., 2002; Gupta & Thomas, 2002; Lenzi et al., 2008; Sturm et al., 2004). It also results in caregiver burden and economic stress at individual, and familial levels (S. Das et al., 2010). Thus stroke is a disease of immense public health importance with economic and social consequences(Donkor et al., 2014).

The most crucial predictor of outcome of treatment of stroke is the time period (often called golden time) between ictus and onset of treatment like thrombolysis. For maximum utilization of thrombolysis within the golden time period, the identification of stroke-sufferers is absolutely essential. Early recognition of stroke symptoms and early arrival at a hospital will provide greater opportunity for an effective stroke management (Marler et al., 2000). Due to lack of knowledge of stroke and inadequate emergency response, many stroke patients are not getting to the hospital within the golden time (Oh et al., 2019).

Knowledge about stroke helps in quick and correct identification of the person suffering a stroke. Accurate knowledge of stroke risk factors and warning signs, right attitude and proper practices of stroke prevention will reduce the incidence of stroke. Whereas, knowledge of immediate action that is necessary in dealing with a stroke patient can reduce both mortality and morbidity among stroke patients by preventing delay in hospitalization, which is primarily caused due to ignorance about stroke (Srivastava & Prasad, 2001).Lack of awareness about stroke affects acute stroke care in high-risk populations and makes effective early treatment difficult (Willey et al., 2009). Hence the success of primary preventive measures for stroke and timely medical attention immediately following a stroke is influenced by the public's knowledge and awareness of stroke and its risk factors (Akinyemi et al., 2009; Jones et al., 2010).

In India and other developing countries, an alarming increase in the incidence of stroke has been observed owing to an increased life span with rising trends of hypertension, diabetes, smoking and stress in daily life (Kaul et al., 2002). India ranks among the top 3 highest number of deaths from stroke ("WHO publishes definitive atlas on global heart disease and stroke epidemic," 2004). It is estimated that, approximately 1.8 million Indians suffer from stroke every year and about one-third of them die annually and another one-third will be left with residual deficits causing permanent disability. These statistics highlight the importance of study of stroke in India with an aim of reduction of stroke burden (Dalal & Bhattacharjee, 2007) as nearly 43.24% of acute stroke patients may die following stroke before

hospitalization (S. K. Das et al., 2007). Therefore, prevention and treatment of stroke demands serious attention for developing countries like India (Davis et al., 2006). There is limited information in the public about the need for regular treatment of hypertension and proper lifestyle changes, which is important to decrease the incidence of stroke and its morbidity (S. K. Das & Banerjee, 2008; Menon et al., 2014). In 2008, the Government of India launched the National Programme for prevention and control of cancer, Diabetes, Cardiovascular Disease and Stroke (NPCDCS), with an aim to prevent and control major chronic diseases and to create awareness about lifestyle behaviours.

It is essential to assess the public awareness concerning the current knowledge, attitude and practices to reduce incidence, mortality-morbidity of stroke in the community. In case of inadequate knowledge among the general population, governmental and non-governmental efforts to empower people with adequate knowledge may be necessary.

Studies from India reported poor awareness of stroke among the population, where the respondents could not identify the organ affected in stroke (Chhabra et al., 2019; Menon et al.2014; Pandian et al., 2005). In the study done in 2005 at Ludhiana where 45% of the population could not name the organ affected in stroke & twenty-two percent of them thought that stroke involved various organs, such as chest, stomach, heart, and the entire body (Pandian et al., 2006). The study done in 2014 revealed that only 35% of the population could identify the brain as the organ involved in stroke (Menon et al., 2014). Similar results were observed in developed countries like United States (Pancioli et al., 1998; Sug Yoon et al., 2001. Wiggers, & Fitzgerald, 2001) and Australia (Sug Yoon et al 2001).

In a study done in 2014, more than 50% of respondents were unable to identify individual risk factors for stroke. Hypertension was attributed to be the most common cause in 50% of respondents followed by diabetes mellitus (40%), alcohol (39%), and smoking (39%); 30% attributed hereditary as a risk factor; 18% of subjects felt that males are more prone for stroke; and 4% identified single risk, 2 risk factors were identified by 5.7% and 3 risk factors were identified by 4% (Menon et al., 2014). In comparison in the study done in 2005 at Ludhiana, the risk factors identified by subjects included hypertension, 425 (45.1%); stress, 385 (40.9%); diabetes, 101 (10.7%); high cholesterol, 63 (6.7%); heredity, 36 (3.8); obesity, 30 (3.2%); heart disease, 19 (2%); lack of exercise, 21 (2.2%); smoking,11 (1.2%) and 195 (20.7%) participants did not know a single risk factor. Only 482 (51.2%) individuals could name 1 risk factor correctly (Pandian et al., 2006), for reasons like literacy, higher educational qualifications, better socio economic status.

The survey of knowledge and attitudes towards stroke, conducted in

urban and rural Uganda found that many individuals have very limited knowledge of risk factors for stroke, and not even aware that stroke is a brain disease, and are not familiar with many of the common early warning signs and symptoms of stroke. Individuals residing in rural setting were most likely to be poorly informed about stroke (Kaddumukasa et al., 2015).

In the Ludhiana study, the most common warning symptom in a stroke, as described by respondents, was paralysis of 1 side of the body, was reported by 586 (62.2%). The other symptoms identified by the participants were headache, 77 (8.1%); loss of consciousness, 57 (6.1%); loss of balance, 59 (6.3%); difficulty in speech, 47 (4.9%); loss of vision, 17 (1.8%); and tingling sensation on 1 side, 12(1.3%). Two hundred and twelve subjects (23%) did not know a single warning symptom of stroke (Pandian et al., 2006). Similarly in another study from South India, 34% of the responders could identify the warning symptoms of stroke; rest responded that they had no idea. Limb weakness was the commonest warning symptom identified by 30%, and 3% felt speech disturbance while face deviation was reported as a symptom by 13% (Menon et al., 2014).

In Ludhiana study, Only 70 (7.4%) of respondents described "blood clot– dissolving drugs" like aspirin as an appropriate therapy for the treatment of stroke. In a similar study from Ireland, 60.3% of the study population mentioned that stroke occurred as a result of a blood clot in the brain (Parahoo et al., 2003). Interestingly sixty-seven (7.1%) respondents of a study believed that an oil massage would help stroke victims. In this study indigenous treatments were suggested for stroke and included Ayurvedic treatment by 13 (1.4%), homeopathy 7 (0.7%), faith healers 7 (0.7%), witchcraft 2 (0.2%), and magician's treatment 6 (0.6%)(Pandian et al., 2006).

In the Menon 2014 study only 2 subjects responded that lifelong treatment would be required. Half of them had no idea about the duration of treatment. One fourth felt that the treatment will be needed to continue for weeks to months, 8% felt that treatment may needed for years, while 9% felt that treatment should be continued till the patient completely recovers; 81 respondents were aware of the dietary restrictions in the treatment of stroke. More than 50% were not aware that stroke is preventable and neither a life-threatening disease (Menon et al., 2014).

In the 2005 study seventy-one percent of subjects reported that they would visit a hospital emergency department if they or one of their relatives experienced symptoms suggesting a stroke (Pandian et al., 2006). Less than 1% of the subjects thought that they would buy medicines from the shop instead of taking the person to a doctor. Younger age and higher education correlated with a correct response to stroke symptoms (Pandian et al., 2006). Participants with higher education, income level, and younger age tend to know more about stroke symptoms and related risk factors (Sadeghi-Hokmabadi et al., 2019.). Mark's study reports only 47.2% individuals knew at least one of the known risk factors of stroke (Kaddumukasa et al., 2015) . A study in Korean general population has identified differences of knowledge of stroke warning signs by occupation in a community-dwelling population (Oh et al., 2019).

Research reviews help us to know how to prevent and manage stroke. Awareness programs will helps us to identify high risk groups for stroke and thus can take precautionary and preventive measures accordingly. India is a vast country with diverse sociocultural and linguistic practices. So it is very difficult to generalize one study's conclusion to the entire Indian population. For that reason, further studies are needed to focus on community surveys including both rural and urban population. Understanding the knowledge gaps and level of awareness will help us to develop appropriate health screening camps and awareness programs for general public.

The Indian participants were observed to hold an attitude that stroke could occur without any risk factors, simply being an event associated with senility and hence consultation with health personnel was reported low. Significantly more than 50% of the study participants stated that they did not know the appropriate treatment for stroke. It is important to educate the public about modern concepts of stroke treatment, so that people can make more rational and beneficial health care decisions (Pandian et al., 2005).

Media and school milieus should be considered as valuable sources of information on stroke. A study by Silver et.al (Silver et al., 2003) has shown that television campaign improved knowledge of warning signs for stroke for both men and women. Governments and NGO's should take an active role to promote healthy behaviors and active lifestyles in schools, panchayats, work places as a preventive measure for stroke. Studies also have to be conducted for identifying the intensity and frequency of medical campaigns and health awareness programs, especially in rural areas. The knowledge and experience of stroke survivors and their relatives can be utilized to create awareness among the public in general and specifically the people at risk (Neau et al., 2009; Stern et al., 1999).

Studies on psychological and emotional burden of the caregivers of stroke survivors also have to be undertaken in both rural and urban populations in India, so as to improve quality of life for the families. The role of physicians and health personnel are also important because of the reliance of the citizens on them as part of counselling to patients and their attendants when they get admitted and come for follow-up in addition to handing over an information leaflet on stroke prevention (S. Das & Das, 2013).

REFERENCES:
1. Akinyemi, R. O., Ogah, O. S., Ogundipe, R. F., Oyesola, O. A., Oyadoke, A. A., Ogunlana, M. O., et al. (2009). Knowledge and perception of stroke amongst hospital workers in an African population. *Eur J Neurol, 16*(9), 998-1003.
2. Chhabra, M., Gudi, S. K., Rashid, M., Sharma, P., Sharma, S., & Khan, H. (2019). Assessment of Knowledge on Risk Factors, Warning Signs, and Early Treatment Approaches of Stroke among Community Adults in North India: A Telephone Interview Survey. *J Neurosci Rural Pract, 10*(3), 417-422.
3. Dalal, P. M., & Bhattacharjee, M. (2007). Stroke epidemic in India: hypertension-stroke control programme is urgently needed. *J Assoc Physicians India, 55*, 689-691.
4. Das, S., & Das, S. K. (2013). Knowledge, attitude and practice of stroke in India versus other developed and developing countries. *Ann Indian Acad Neurol, 16*(4), 488-493.
5. Das, S., Hazra, A., Ray, B. K., Ghosal, M., Banerjee, T. K., Roy, T., et al. (2010). Burden among stroke caregivers: results of a community-based study from Kolkata, India. *Stroke, 41*(12), 2965-2968.
6. Das, S. K., & Banerjee, T. K. (2008). Stroke: Indian scenario. *Circulation, 118*(25), 2719-2724.
7. Das, S. K., Banerjee, T. K., Biswas, A., Roy, T., Raut, D. K., Mukherjee, C. S., et al. (2007). A prospective community-based study of stroke in Kolkata, India. *Stroke, 38*(3), 906-910.
8. Davis, S., Lees, K., & Donnan, G. (2006). Treating the acute stroke patient as an emergency: current practices and future opportunities. *Int J Clin Pract, 60*(4), 399-407.
9. Donkor, E. S., Owolabi, M. O., Bampoh, P. O., Amoo, P. K., Aspelund, T., & Gudnason, V. (2014). Profile and health-related quality of life of Ghanaian stroke survivors. *Clin Interv Aging, 9*, 1701-1708.
10. Gupta, A., Pansari, K., & Shetty, H. (2002). Post-stroke depression. *Int J Clin Pract, 56*(7), 531-537.
11. Gupta, A., & Thomas, P. (2002). General perception of stroke. Knowledge of stroke is lacking. *BMJ, 325*(7360), 392.
12. Jones, S. P., Jenkinson, A. J., Leathley, M. J., & Watkins, C. L. (2010) Stroke knowledge and awareness: an integrative review of the evidence. *Age Ageing, 39*(1), 11-22.
13. Kaddumukasa, M., Kayima, J., Kaddumukasa, M. N., Ddumba, E., Mugenyi, L., Pundik, S., et al. (2015). Knowledge, attitudes and perceptions of stroke: a cross-sectional survey in rural and urban Uganda. *BMC Res Notes, 8*, 819.
14. Kaul, S. (2002). Strike out stroke. *Neurology India, 50*(S1).
15. Lenzi, G. L., Altieri, M., & Maestrini, I. (2008). Post-stroke depression. *Rev Neurol (Paris), 164*(10), 837-840.
16. Marler, J. R., Tilley, B. C., Lu, M., Brott, T. G., Lyden, P. C., Grotta, J. C., et al. (2000). Early stroke treatment associated with better outcome: the NINDS rt-PA stroke study. *Neurology, 55*(11), 1649-1655.
17. Menon, B., Swaroop, J. J., Deepika, H. K. R., Conjeevaram, J., & Munisusmitha, K. (2014). Poor awareness of stroke--a hospital-based study from South India: an urgent need for awareness programs. *J Stroke Cerebrovasc Dis, 23*(8), 2091-2098.
18. Murray, C. J. L., & Lopez, A. D. Measuring global health: motivation and evolution of the Global Burden of Disease Study. *Lancet, 390*(10100), 1460-1464.
19. Neau, J. P., Ingrand, P., & Godeneche, G. (2009). Awareness within the French population concerning stroke signs, symptoms, and risk factors. *Clin Neurol Neurosurg, 111*(8), 659-664.
20. Oh, G. J., Lee, K., Kim, K., & Lee, Y. H. (2019). Differences in the awareness of stroke symptoms and emergency response by occupation in the Korean general population. *PLoS One, 14*(6), e0218608.
21. Pancioli, A. M., Broderick, J., Kothari, R., Brott, T., Tuchfarber, A., Miller, R., et al. (1998). Public perception of stroke warning signs and knowledge of potential risk factors. *JAMA, 279*(16), 1288-1292.
22. Pandian, J. D., Jaison, A., Deepak, S. S., Kalra, G., Shamsher, S., Lincoln, D. J., et al. (2005). Public awareness of warning symptoms, risk factors, and treatment of stroke in northwest India. *Stroke, 36*(3), 644-648.
23. Pandian, J. D., Kalra, G., Jaison, A., Deepak, S. S., Shamsher, S., Singh, Y., et al. (2006). Knowledge of stroke among stroke patients and their relatives in Northwest India. *Neurol India, 54*(2), 152-156; discussion 156.
24. Parahoo, K., Thompson, K., Cooper, M., Stringer, M., Ennis, E., & McCollam, P. (2003). Stroke: awareness of the signs, symptoms and risk factors--a population-based survey. *Cerebrovasc Dis, 16*(2), 134-140.
25. Sadeghi-Hokmabadi, E., Vahdati, S. S., Rikhtegar, R., Ghasempour, K., & Rezabakhsh, A. (2019). Public knowledge of people visiting Imam Reza hospital regarding stroke symptoms and risk factors. *BMC Emerg Med, 19*(1), 36.
26. Silver, F. L., Rubini, F., Black, D., & Hodgson, C. S. (2003). Advertising strategies to increase public knowledge of the warning signs of stroke. *Stroke, 34*(8), 1965-1968.
27. Srivastava, A. K., & Prasad, K. (2001). A study of factors delaying hospital arrival of patients with acute stroke. *Neurol India, 49*(3), 272-276.
28. Stern, E. B., Berman, M., Thomas, J. J., & Klassen, A. C. (1999). Community education for stroke awareness: An efficacy study. *Stroke, 30*(4), 720-723.
29. Sturm, J. W., Donnan, G. A., Dewey, H. M., Macdonell, R. A., Gilligan, A. K., Srikanth, V., et al. (2004). Quality of life after stroke: the North East Melbourne Stroke Incidence Study (NEMESIS). *Stroke, 35*(10), 2340-2345.
30. Sug Yoon, S., Heller, R. F., Levi, C., & Wiggers, J. (2001). Knowledge and perception

about stroke among an Australian urban population. *BMC Public Health, 1*, 14.

31. Sug Yoon, S., Heller, R. F., Levi, C., Wiggers, J., & Fitzgerald, P. E. (2001). Knowledge of stroke risk factors, warning symptoms, and treatment among an Australian urban population. *Stroke, 32*(8), 1926-1930.

32. WHO publishes definitive atlas on global heart disease and stroke epidemic. (2004). *Indian J Med Sci, 58*(9), 405-406.

33. Willey, J. Z., Williams, O., & Boden-Albala, B. (2009). Stroke literacy in Central Harlem: a high-risk stroke population. *Neurology, 73*(23), 1950-1956.