

Community Awareness about Cerebrovascular Stroke in Surat City: A Cross-Sectional Survey

Dr. Aparna Bachkaniwala¹, Dr. Vivek Ramanandi²

^{1,2}SPB Physiotherapy College, Veer Narmad South Gujarat University, Surat, India

Corresponding Author: Dr. Vivek Ramanandi

DOI: <https://doi.org/10.52403/ijhsr.20231139>

ABSTRACT

Background: Cerebrovascular stroke (CVS) is one of the commonest causes of disability worldwide. Community awareness regarding causes, disabilities, treatment interventions, course, and prognosis of CVS is crucial in improving care and rehabilitation as well as reducing burden of disease on the society and nation. The study was undertaken to assess the level of awareness regarding CVS and relevant aspects among community dwelling individuals of Surat city in Gujarat, India.

Methodology: A cross-sectional survey was conducted among 135 normal healthy individuals residing in the urban area of Surat city in the month of November 2022. A pre-tested questionnaire with 20 questions assessing the awareness regarding CVS was circulated among the individuals and responses received were evaluated.

Results: The mean age of the study group was 49.9 years and 57.80% of the respondents were males. While majority of the participants (60.40%) had moderate to good knowledge regarding stroke, most of the participants, i.e., 53.9% did not know how to respond in case of emergency when they suspect that a person is having CVS. 42.60% of the participants who had knowledge about stroke reported that they received their knowledge when one of their known relatives were affected by CVS and out of all the participants, 78.80% chose that they would like to receive education regarding CVS stroke through healthcare professional and using social media platforms.

Conclusion: Community dwelling health adults of Surat city have moderate to good awareness regarding CVS and most of the surveyed people reported that they want to receive knowledge regarding CVS. This prevailing scenario shows that creating awareness about significant neurological condition among community can help progress health services for diseased and shall be prioritized to improve quality of healthcare for all.

Keywords: Awareness, community, healthcare, hemiplegia, knowledge, stroke.

INTRODUCTION

According to global stroke fact sheet 2022 issued by world stroke organization, incidence of stroke per year is 12.2 million and therefore global prevalence is so high that approximately more than 101 million people are currently living who have experienced stroke.¹ Stroke remains the second-leading cause of death and the third-leading cause of death and disability combined in the world.^{1,2} The most common and widely recognized deficit

caused by stroke is motor impairment resulting in a loss or limitation of functional mobility and subsequent activity limitations, that can be seen in up to 80% of individuals with stroke.³

Stroke-related knowledge can play important role to reduce the incidence, mortality, and disability rates of stroke and various health education measures can significantly impact the community awareness.⁴ Previous studies have reported that the level of understanding about stroke

warning symptoms and first aid systems is generally low among community residents.⁵⁻⁷ This study intended to identify the amount of awareness and knowledge regarding the warning symptoms of stroke; first aid; the need and effect of health awareness education for stroke recognition among community dwelling individuals.

MATERIALS & METHODS

It was a cross-sectional descriptive study conducted among community dwelling individuals residing in the urban area of Surat city. Total 200 pre-tested survey questionnaire in Gujarati language were

distributed through volunteers and 135 participants' completed responses were received. The questionnaire included 20 questions regarding information about demographics, their experience with and awareness about stroke, physiological and risk factors of stroke, immediate identification of signs and management of stroke, and their willingness to participate in stroke education. Informed consent was taken from the respondents at the start of the survey. The data collected was analysed using appropriate statistics.

RESULT

Table 1: Demographic Details of the Participants (n=135)

Characteristic	Class	n	%
Gender	Male	78	57.78
	Female	57	42.22
Education	Professional/Ph.D.	6	4.44
	Graduate/Post-Graduate	64	47.41
	Diploma/Certificate	18	13.33
	Higher Secondary	16	11.85
	Secondary	12	8.89
	Primary	8	5.93
	Uneducated	11	8.15
Occupation	Professional	16	11.85
	Semi-professional	25	18.52
	Clerk/ Shopkeeper/ Farmer	29	21.48
	Skill based work	21	15.56
	Minor skill-based work	8	5.93
	Work with no skill required	23	17.04
	None	13	9.63
Monthly Income (INR)	45035 or more	34	25.19
	22518-45034	49	36.30
	16888-22517	15	11.11
	11259-16887	19	14.07
	6755-11258	11	8.15
	2274-6754	6	4.44
	2273 or less	1	0.74

Table 2: Participants' responses to Questionnaire (n=135)

Domain	Question	Response	Frequency (n)	Frequency (%)
History of Stroke	Have you had history of Stroke?	Yes	8	5.93
		No	123	91.11
		Can't Say	4	2.96
	Have your family member has history of stroke?	Yes	32	23.70
		No	96	71.11
History of Relevant Chronic Disease	Do you have history of any of following chronic disease?	Can't Say	5	3.70
		Heart Disease	5	3.70
		Diabetes	56	41.48
		Obesity	23	17.04
		Cancer	2	1.48
		Lung Disease	11	8.15
		High Blood Pressure	64	47.41
		High Cholesterol	45	33.33
Knowledge and Awareness about Stroke	What is the organ of body which is affected by Stroke?	None from the above	8	5.93
		Liver	0	0.00
		Heart	10	7.41
		Kidney	0	0.00
		Brain	114	84.44
	Pancreas	0	0.00	

		Lungs	4	2.96
		I don't know	7	5.19
	According to your knowledge what shall be the normal blood pressure value?	120/100 mm Hg	8	5.93
		100/80 mm Hg	6	4.44
		120/80 mm Hg	118	87.41
		80/120 mm Hg	3	2.22
	According to your knowledge what shall be the normal sugar levels in our body?	Less than 100 mg/dl	121	89.63
		More than 140 mg/dl	0	0.00
		Less than 200 mg/dl	14	10.37
	Are aware about "BE FAST" acronym which is used to describe symptoms of stroke?	Yes	21	15.56
		No	114	84.44
	How many hours after stroke are extremely important for treatment and recovery?	12	13	9.63
		48	94	69.63
		24	21	15.56
		72	7	5.19
	What shall you do when you feel that you or someone from your known are having stroke?	Call 108/ambulance	119	88.15
		Sleep and take rest	12	8.89
		Immediately seek medical care	121	89.63
		Avoid symptoms	0	0.00
		Test "BE FAST"	2	1.48
	From the following, which one do you know as the symptoms of stroke?	Unclear speech	23	17.04
		Loss of balance	41	30.37
Chest pain		52	38.52	
Weakness of face muscles		16	11.85	
Weakness of arm muscles		81	60.00	
Difficulty of vision		29	21.48	
From the following, which one do you know as the risk factors for stroke?	Increased heart rate	38	28.15	
	High Blood Pressure	128	94.81	
	Heavy alcohol intake	116	85.93	
	Smoking	119	88.15	
	High salt and fat diet	125	92.59	
	Regular Exercise	1	0.74	
How did you come to know about different aspects related to stroke?	High Cholesterol	56	41.48	
	Healthcare provider	21	15.56	
	Media (TV/ Social)	47	34.81	
	School Education	14	10.37	
	Relative or family member with stroke	32	23.70	
	Friends circle	18	13.33	
		I don't know	3	2.22
Understanding about Importance of stroke prevention and education	Please rate following statements based upon your agreement to them.			
	Stroke can be prevented	Strongly Disagree	3	2.22
		Disagree	2	1.48
		Neutral	7	5.19
		Agree	19	14.07
		Strongly Agree	104	77.04
	I know the symptoms of stroke	Strongly Disagree	27	20.00
		Disagree	12	8.89
		Neutral	21	15.56
		Agree	32	23.70
		Strongly Agree	43	31.85
	I think it is important to understand symptoms of stroke	Strongly Disagree	27	20.00
		Disagree	12	8.89
Neutral		21	15.56	
Agree		22	16.30	
Strongly Agree		63	46.67	
Willingness to learn about stroke	How would you want to learn and stay updated about stroke?	Individual guidance	23	17.04
		From my doctor	45	33.33
		Social Media (Facebook, Instagram, etc)	121	89.63
		Newspaper	46	34.07
		TV Advertise	53	39.26
		Others	0	0.00

DISCUSSION

Present study explores the level of awareness regarding CVS and relevant aspects among community dwelling individuals from a major city in Western India. As the studies in Indian population relevant to the same aspects are scarce, the findings are majorly discussed with reference to the content available from other countries and the empirical evidence.

The study included 135 community residing individuals and the survey questionnaire included aspects such as demographics, stroke awareness, knowledge about stroke prevention and willingness about stroke education. The majority participants were males and mean age of the sample was 49.9 years. Most respondents (72%) were 50 years of age or below suggesting the participants are relatively young as compared to stroke patients. Stroke at a younger age combined with an increasing incidence of risk factors in the younger population and a growing aging population makes the younger population group the best target for prevention.

As most of the participants (91.11%) did not have any history of stroke, the sample was presumed to be suitable for evaluating the awareness. It was reported that >45% of the participants had history of hypertension or diabetes. The figures are higher as compared to the national data suggestive of overall prevalence of hypertension to be 29.8% and in urban areas it is suggested to be on higher side with 33.8%¹¹. Out of 135, about 85% participants identified that the brain is the organ affected due to stroke. This is in contrast with the past study conducted in Uganda and China where only 24% and 41% of participants correctly identified stroke as a disorder of the brain respectively⁹.

As reported by the participants, almost 87% had the knowledge that normal blood pressure values shall be 120/80 mmHg. According to the Global Stroke Fact Sheet, five leading risk factors for stroke were high systolic blood pressure (SBP), high BMI, high fasting plasma glucose, ambient

particulate matter pollution, and smoking¹. More than 90% of the participants recognized all major warning symptoms of stroke which contrasted with the previous findings suggestive of low awareness with only 40.3% of participants being aware of the risk of stroke in China¹⁰. In a previous telephonic survey conducted among 350 respondents of North India, hypertension was found to be the most common risk factor (58.57%), followed by poor eating habits (43.17%), hyperlipidaemia (26.85%), smoking (22.28%), alcohol intake (14%), and tobacco consumption (13.14%), lastly followed by diabetes (4.57%)⁷.

While responding to the questions regarding warning signs and symptoms of stroke, it was reported that 84.44% were aware about the terminology “BE FAST” and meaning of it, whereas 70% reported that they were aware that initial 48 hours were crucial. This contrasts with the responses from North Indian population where only 46% were aware of the warning signs of stroke⁷. A study conducted by Schneider et al (2003), reported that approximately 70% participants were able to correctly name at least one of the warning signs of stroke in population of US; whereas Zhong et al (2022), reported the recognition rate of stroke warning symptoms ranging from as 29.8–59.5% among Chinese population; and Kaddumukasa et al (2015) concluded that in Ugandan sample 43% were aware of the warning signs of stroke^{6,9,10}.

Among the participants, the recognition rate of common stroke symptoms such as limb & face weakness, language disorder, and balance disorder, was more than 60%. Other symptoms such as chest pain (38.52%), visual problems (21.48%), and increased heart rate (28.15%) as stroke manifestations were also identified, suggesting that community residents’ knowledge of stroke warning symptoms.

In this study, approximately 94% participants reported that they will immediately seek medical care or call ambulance as initial response to symptoms of stroke. As per the findings of Chhabra et

al (2019), 65% respondents said that they will themselves take the patient to the hospital immediately or call to the ambulance-108 services⁷. Many other previous studies have reported that similar findings suggesting that almost all respondents chose to send the patients to hospital emergency department^{4,6,8-10}.

Chhabra et al (2019) concluded that the primary source of education about stroke for participants were pharmacists, physicians, relatives/friends, newspapers/magazines, and nurses in descending order⁷. Kamran et al (2008) reported that among 3750 participants across Gulf Co-operation Countries, 70.2% considered healthcare staff to be their primary source of information about stroke followed by health education material (39.7%), TV & radio (25%), books (24.9%), news papers & magazines (16.6%), and family members (9.5%)⁵. Among the survey participants of this study, a higher number of respondents (34.81%) had stated that the digital media such as, TV and social media, as their primary source of information on stroke education; followed by relatives or family members of patients (23.70%); healthcare providers (15.56%); friend groups (13.33%), and school education (10.37%). In contrast to other studies this study showed higher number participants preferring digital media for education which can be due to the changing scenario in country by increasing internet and media accessibility for all.

In present study, 77% participants strongly agreed that stroke is preventable and 47% acknowledged that it is important to understand the symptoms, while only 32% strongly agreed that they know the symptoms of stroke. Kaddumukasa et al (2015), reported that out of 377 Ugandan participants 56.2% participants accept that stroke is preventable and 76.4% agreed that stroke can be prevented if treated early⁹. As more than 89% respondents responded that they would like to learn about stroke through social media (Facebook, Instagram, etc), it is suggesting increasing preference

and utilization of mobile devices-based media platforms by Indian population.

CONCLUSION

As India is experiencing a rapid economic transition and expected to have an increasing number of ageing people, prevention of stroke is of paramount importance. Primary prevention is central as an efficient and inexpensive way of reducing disease burden. An educational campaign focusing on educating the public regarding the signs, symptoms, and risk factors of stroke can help in improving early recognition, reducing time to treatment, and reducing the risk of stroke. In conclusion, in the present study, we assessed the baseline knowledge of stroke risk factors and warning signs which can be helpful in designing an effective future program for better stroke care and rehabilitation.

Declaration by Authors

Ethical Approval: None

Acknowledgement: All the participants and volunteers who helped in collecting the data from the community residing individuals.

Source of Funding: None

Conflict of Interest: None

REFERENCES

1. Feigin VL, Brainin M, Norrving B, et al. World Stroke Organization (WSO): Global Stroke Fact Sheet 2022. *Int J Stroke*. 2022;17(1):18-29. DOI: 10.1177/17474930211065917.
2. Stroke. Recommendations on stroke prevention, diagnosis, and therapy. Report of the WHO Task Force on Stroke and other Cerebrovascular Disorders. *Stroke*. 1989; 20(10): 1407-31. DOI: 10.1161/01.str.20.10.1407.
3. Park S, Tang A, Pollock C, et al. Telerehabilitation for lower extremity recovery poststroke: a systematic review and meta-analysis protocol. *BMJ Open*. 2022; 12(3): e055527. DOI: 10.1136/bmjopen-2021-055527.
4. Lundelin K, Graciani A, García-Puig J, et al. Knowledge of stroke warning symptoms and intended action in response to stroke in

- Spain: a nationwide population-based study. *Cerebrovasc Dis.* 2012; 34:161–8.
5. Kamran S, Bener AB, Deleu D, et al. The level of awareness of stroke risk factors and symptoms in the Gulf cooperation council countries: gulf cooperation council stroke awareness study. *Neuroepidemiology.* 2007; 29: 235–42.
 6. Schneider AT, Pancioli AM, Khoury JC, et al. Trends in community knowledge of the warning signs and risk factors for stroke. *JAMA.* 2003; 289: 343–6.
 7. Chhabra M, Gudi SK, Rashid M. Rohit, et al. 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.* 2019; 10: 417–22.
 8. Syed W, Qadhi OA, Barasheed A, et al. Evaluation of knowledge of risk factors and warning signs of stroke – An observational study among future health care professionals. *Front Public Health.* 2023; 11:1131110. DOI: 10.3389/fpubh.2023.1131110
 9. Kaddumukasa M, Kayima J, Kaddumukasa MN, et al. Knowledge, attitudes, and perceptions of stroke: a cross-sectional survey in rural and urban Uganda. *BMC research notes.* 2015; 8(1): 1-7.
 10. Zhong X, Wang J, He L, et al. Recognition of stroke-related knowledge among community residents and the improvement after intensive health education: a cross-sectional study. *BMC neurology.* 2020; 20(1): 1-7.
 11. Hypertension - National Health Mission. Screening, Diagnosis, Assessment, and Management of Primary Hypertension in Adults in India. nhm.gov.in/images/pdf/guidelines/nrhm-guidelines/stg/Hypertension_full.pdf (Accessed February-2023)

How to cite this article: Aparna Bachkaniwala, Vivek Ramanandi. Community awareness about cerebrovascular stroke in Surat city: a cross-sectional survey. *Int J Health Sci Res.* 2023; 13(11):322-327. DOI: [10.52403/ijhsr.20231139](https://doi.org/10.52403/ijhsr.20231139)
