OPEN ACCESS ORIGINAL RESEARCH ARTICLE

SOCIO-DEMOGRAPHIC FACTORS OF STROKE PATIENTS FOR DELAYING IN HOSPITAL ARRIVAL.

Khadim Ali Majeedano[1], Shefa Lakho[2], Muhammad Siddique Rajput[3], Sikandar Ali Siyal[4], Jawed Hussain Lighari[5], Mir Tahir Hussain Talpur[6].

ABSTRACT

BACKGROUND: Stroke has a major impact on morbidity, mortality and on economics, particularly of underdeveloped countries. The pre-hospital delays i.e. delay before the patient reaches the hospital and thrombolytic treatment are the two main factors affecting the stoke patients morbidity and mortality. The objective of this study was to determine the sociodemographic factor associated with delayed hospital arrival of such patients. **MATERIAL & METHODS:** This cross sectional study on 200 diagnosed patients of stroke with both genders was conducted in Neurology OPD and Medical wards of PMC hospital Nawabshah. The information regarding the socio-demographic factors involved in delayed hospital arrival of these stroke patients were documented in the predesigned Questionnaire and statistical analysis was done. **RESULTS:** The mean age of the participants was 58.9 years and stroke was three times more common im males as compared to females. Majority of the participants were belonging to lower class 157 (78.5%) and 74.5% participants were Illiterate. Out of total 200 patients 67% were hypertensive and approximately 30% patients had history of diabetes. History of Ischemic Heart Disease found in 32(16%) patients. 161(80.5%) participants 0ut of total 200 reached to the hospital after 6 hours being diagnosed or suspected. Older age of patients, marital status, ethnicity, occupation, failure to recognize stroke symptoms and decision taken for shifting the patients to hospital were the factors which were found in our study regarding delayed hospital arrival of stroke patients. **CONCLUSION:** Our study concluded that most of the factors which lead to delay in hospital presentation were modifiable and interventions by the concerned health authorities may have a positive effect on the time taken to report to the hospital.

KEY WORDS: Stroke, Hypertension, Sociodemographic factors, delayed hospital presentation,

1. Senior Lecturer, Department of Community Medicine, PUMHSW, Nawabshah.
2. Assistant Professor Community Medicine, Mohtarma Benazir Bhutto Medical College Liyari.
3. Associate Professor, Department of Community Medicine PUMHSW, Nawabshah.
4. Assistant Professor, Pathology, SRMC TA.
5. Associate Professor, Department of Community Medicine PUMHSW, Nawabshah.
6. Associate Professor, Department of Medicine PUMHSW, Nawabshah.

Corresponding author: Muhammad Siddique Rajput, Associate Professor, Department of Community Medicine, PUMHS, Nawabshah Dr_rana82@yahoo.com

How To Cite This Article: Majeedano KA[1], Lakho S[2], Rajput MS[3], Siyal S [4]Lighari JH[5], Talpur MTH [6]. **SOCIO-DEMOGRAPHIC FACTORS OF STROKE PATIENTS FOR DELAYING IN HOSPITAL ARRIVAL**.JPUMHS;2024:14:01,64-69. http://doi.org/10.46536/jpumhs/2024/14.01.496

RECEIVED AUG 05.2023, ACCEPTED ON 15 MARCH 2024, PUBLISHED ON 30 MARCH 2024.

INTRODUCTION

Stroke is defined as a rapid and sudden develo pment of focal neurological deficit that lasts morethan 24 hours in which the cause originat es from the vascular system. Hemiplegia, Monoplegia, Speech disturbance and coma are the most common manifestations of stroke. Most of these deaths occur in developing countries. Furthermore, CVA is the major cause of disability in adults. Each year millions of patients who have survived the stroke develop the disability and need constant support from others. Stroke survivors can experience moderate to severe disability. However sometimes significant recovery takes place in six months with no apparent reason.[1] Around 63 percent of stroke patients develop complications and almost 89 percent of stroke patients are dependent on others for their self-care and daily activities.[2] Nearly 80% of strokes are ischemic (infarction) are due to occlusion of minute arteries that transport blood to the brain. Almost 15% of strokes are caused by rupture of the blood vessels in the brain tissue (hemorrhage) that can spread to the brain

ventricles (Intraventricular hemorrhage), and rarely in the subarachnoid spaces.[3]

Stroke is associated with several risk factors. Some of them are changeable such as diabetes mellitus, dyslipidemia, hypertension, tobacco use, cardiovascular disease, obesity, physical inactivity, socio-economic status, psychosocial stress and alcohol use. Age, sex, ethnicity and family history are unchangeable risk factors.[4] Hypertension is the major risk factor in the whole world and present in 70% of cases. Smoking is another major risk factor and smokers are 2 to 4 times more likely suffer stroke than non-smokers. The well known risk factor of stroke is Diabetes mellitus and occurs three times more often in diabetic patients compared to non-diabetics.[5]

Stroke has a major impact on morbidity, mortality and economic burden of countries particularly in underdeveloped countries.[6] An estimated 104.2 million individuals worldwide are believed to have had a stroke, and 6.2 million fatalities were linked to CVAs globally in 2017. Globally, there is an increasing lifetime risk of stroke due to the aging population and the accumulation of risk factors, even in spite of hopeful evidence on falling stroke incidence.[7] WHO reported a total number of 78,512 deaths from stroke in Pakistan and stroke-specific mortality ranged from 7% to 20% in different studies within Pakistan.[8] Among peoples over 45 years of age one in three adults has hypertension and is affects 19 % of the young population from 15 to 45 years of age.[9]

Despite current advances in stroke care, most people do not intend to take advantage of services even in very developed countries. There is a lack of global awareness about risk factors and care of stroke patients. A multi-center study in the America found that more than half of patients with increased risk were unaware of the risk factors.[10] Depending on socio-demographic variations, socio-economic status and health care systems, the factors delaying hospital arrival differ among populations in the eastern and western countries.[11] Due to diversity in culture, ethnicity, socio-demographic and socioeconomic characteristics healthcare system, factors linked with delayed hospital arrival may differ between western and eastern populations. There are also differences in social development patterns in the West.[12] Some studies showed longer arrival times for women in the emergency department than for men, but other studies show no significant difference.[13] Time of onset of symptoms, symptom recognition, time to seek immediate medical attention, choice of medical treatment and transportation are key factors. Pre-hospital wait can be minimized by decreasing the patient's decision time, increasing the use of emergency medical services and early detection of stroke symptoms and using clinical trials effectively.[14]

Numerous nations with varying degrees of national healthcare coverage have shown the connection between poverty and health disparities. It's unknown what causes this link since it's hard to compare published research because of their variety, including the indicators of socioeconomic status (SES) that are measured (income, education, occupation, class, and so on). It is nonetheless true that studies have demonstrated an adverse relationship between these proxy measures of SES and stroke case mortality, reduced functional and motor recovery during rehabilitation, decreased access to health care following stroke, and elevated risk of repeat stroke. [15]

MATERIAL AND METHODS

Study Setting: This descriptive Cross-Sectional study was conducted at Out Patient Department (OPD) of Neurology department and Medical Ward of PMC Hospital Nawabshah. **Sample Size** was calculated using standard formula, with 95% confidence interval and 5% margin of error. The calculated sample size was 200 with both genders. Non-probability convenience sampling was used.

Inclusion criteria

1. Adults of both gender
2. Age of Patients was 25 years and above.
3. Diagnosed patients of Stroke.

Exclusion criteria

1. Age below 25 years.
2. Patients suffering from any other neurological disease.
3. Transient ischemic attack or Subarachnoid hemorrhage.

Data Collection Procedure: After approval from Institutional Review Board, the diagnosed cases of Stroke visiting Out Patient Department (OPD) and admitted patients in Medical ward at PMC hospital Nawabshah, fulfilling the criteria were included in this study. After taking written consent the information were gathered

on the pre-designed questionnaire for record. Demographic (age and sex) and clinical sign and symptom data were collected through structured questionnaire.. **Data Analysis Procedure**: The data was analyzed in version 24.0 of the Statistical Package for Social Sciences (SPSS). For categorical variables, frequency and percentage were calculated. The data was formulated through Graphs and Charts.

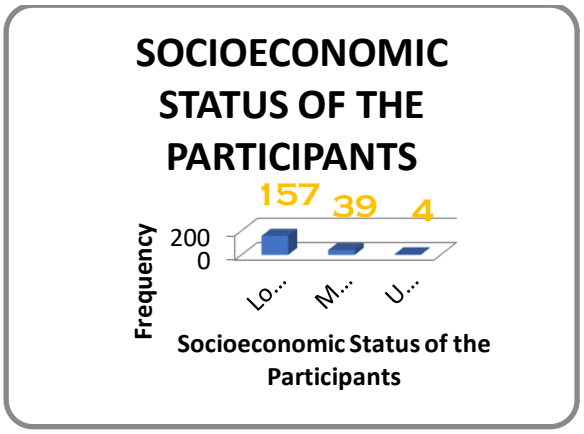
RESULTS

Table 01: Socio-demographic characteristics of the Participants (n = 200)

Socio-demographic characteristics of the Participants				
Sr. No	**Characteristics**	**Frequency**	**Percent**	**Cumulative Percent**
1	**Gender Distribution of Participants**			
	Male	135	67.5	60.0
	Female	65	32.5	100.0
	Total	200	100.0	
2	**Age of Participants (in years)**			
	25 to 36 years	06	3.0	3.0
	37 to 48 years	23	11.5	14.5
	49 to 60 years	62	31	45.5
	61 years and above	109	54.5	100.0
	Total	200	100.0	
3	**Residence of Participants**			
	Urban	78	39.0	39.0
	Rural	122	61.0	100.0
	Total	200	100.0	
4	**Occupation of Participants**			
	Unemployed	55	27.5	27.5
	Skilled Person	130	65	92.5
	Employed	15	7.5	100.0
	Total	200	100.0	
5	**Literacy status of Participants**			
	Illiterate	149	74.5	21.0
	Primary	45	22.5	87.0
	Secondary	03	1.5	96.0
	Graduate	03	1.5	100.0
	Total	200	100.0	

Data from the above show the brief information of demographic characteristics of the participants. There were 135 (67.5%) male participant and 65 (32.5%) female participants in our study. Age was divided in 04 class intervals from 25 to 36 years of age were 06 (3%) 37 to 48 years were 23 (11.5%), from 49 to 60 years of age were 62 (31%) and remaining 109 (54.5%) were above the age of 60 years. Majority of the participants were belonging to rural areas and were 122 (61%) and remaining 78 (39%) were belonging to urban area of adjacent areas of Nawabshah. Occupation of the participants was also asked and 55 (27.5%) participants were unemployed 130 (65%) were skilled persons and remaining 15 (7.5%) were employed. Level of education was also measured and majority of the participants were illiterate (149 (74.5%).

Figure 01: Socioeconomic Status of the Participants (n=200)



Socioeconomic status is very important characteristic that directly associated with the severity of the disease and it was noted that 157 (78.5%) participants were belonging to poor class and 39 (19.5%) were from middle class and only 4 (2%) were from upper class.

Table 02: Medical conditions / comorbidities associated with stroke (n=200)

Medical Conditions	Frequency (n)	Percentage (%)
Family history of stroke	62	31.0
Hypertension	134	67.0
Diabetes mellitus	60	30.0
History of Ischemic Heart Disease	32	16.0
Sedentary life style	76	38.0
Smoking status(Smokers)	91	45.5
Total	200	100

Distribution of medical condition of stroke patients were presented in table 2 where the distribution of history of diseases and presence of co-morbidities were stated; out of 200 stroke patients 134(67%) were hypertensive and approximately 1/3 patients 60(30%) had history of diabetes. History of IHD found in 32(16%) patients. 76(38%) are living activity less and unhealthy life and 91(45.5%) patients were smokers.

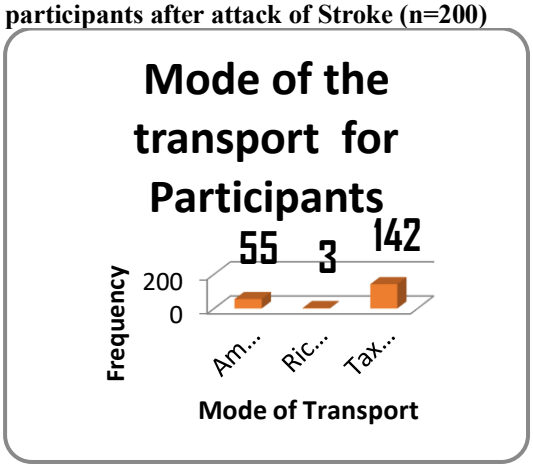
Table 03: Time of Delayed hospital arrival of the stroke patients (n=200)

Time of Delayed hospital arrival of the stroke patients			
Time to reach Hospital	Frequency	Percent	Cumulative Percent

Time to arrive	<6 hours	39	19.5	19.5
	> 6 hours	161	80.5	100.0
	Total	200	100.0	

Out of total 200 most of stroke patients only 39(19.5%) patients reached before 6 hours and majority of the participants 161(80.5%) reached to the hospital after 6 hours. Maximum time to reach hospital was 2 hours from the residence of the participants.

Figure 02: Mode of the transport for the participants after attack of Stroke (n=200)



Mode of transportation was asked from the participants and most common source used was taxi for private transport 142 (71%). Ambulance service was not available and was the major cause of delay in reaching hospital and only 55(27.5%) could avail ambulances services.

DISCUSSION

Stroke is a major cause of morbidity, mortality and socio-economic challenges, especially in developing countries such as Pakistan where the health system, including rehabilitation, is not within the reach of common people particularly in rural areas. Most stroke patients belonged to the age group of 50 years and above in the present study. In our study we did not differentiate the type of strokes while a local study reported that 82% of their patients had Ischemic stroke and 18% had Hemorrhagic. While some other studies reported a frequency ranging from 78–79% for Ischemic and 17–21% for Hemorrhagic stroke.[16]

The important factors of pre-hospital delay in this study were patients who did not recognize their symptoms as serious, residents of rural areas, did not arrive at the emergency, and had a stroke while awake.[17] This study also shows the same scenario as seen in past studies. Community awareness regarding signs and symptom identification and early arrival at a tertiary care center will reduce the mortality and morbidity associated with it. In particular, primary health care persons play a significant role in educating at-risk patients, identifying stroke signs and symptoms, and referring them to Tertiary Care Hospital.

Previous studies from developed countries on pre-hospital delaying factors were living alone, nocturnal onset, ischemic stroke, lack of recognition of signs and symptoms, lack of knowledge of stroke, perceived seriousness of symptoms, failure to act immediately and initial contact with non-emergency services as important factors delaying arrival seen. A study revealed a lack of understanding of stroke signs and symptoms, contact with a local doctor before arrival and a lack of ambulance services associated with delayed arrival. Appropriate measures must be taken to increase public understanding of stroke and the role of local doctors.[18]

In this study we kept the cut-off point for 6 hours, considering the delay of the hospital for thrombolysis of the stroke. Our results showed shorter prehospital delays in male patients. Jin et al. stated that patients > 65 years of age and female patients are more likely than younger patients and males do arrive early. We also consider age approximately 50 as a significant variable for delayed arrival, but our analysis does not find any singularity with gender. Sex and age were not associated with pre-hospital delays in several other reports.[19]

Many studies have shown that the use of ambulances can reduce delays in prehospitals. Emergency ambulance services are not urgently available and in order to reach the hospital patients must rely on other modes of transport. The referral pattern is one of the main determinants of delay. It was noted that, rather than going directly to ED, a considerable percentage of patients (74 percent) first contacted their local or community doctor. [20]

ETHICS APPROVAL: The ERC gave ethical review approval.

CONSENT TO PARTICIPATE: written and verbal consent was taken from subjects and next of kin.

FUNDING: The work was not financially supported by any organization. The entire expense was taken by the authors.

ACKNOWLEDGEMENTS: We are thankful to all who were involved in our study.

AUTHORS' CONTRIBUTIONS: All persons who meet authorship criteria are listed as authors, and all authors certify that they have participated in the work to take public responsibility of this manuscript. All authors read and approved the final manuscript.

CONFLICT OF INTEREST: No competing interest declared

REFERENCES

1. Lohano AK, Samie A, Siayal NN. Frequency of stroke in hypertensive patients. The Professional Medical Journal. 2014;21(03):484-8.
2. Zuhaid M, Salman S, Chawla JA, Farooq U, Ahmad A, Khan S, et al. Frequency of modifiable risk factors in stroke patients. Journal of Ayub Medical College Abbottabad. 2014;26(2):235-8.
3. Lahano AK, Chandio MA, Bhatti MI. Frequency of common modifiable riskfactors for stroke. Gomal Journal of Medical Sciences. 2014;12(4).
4. Siddiqui MR, Islam QT, Iqbal MJ, Binte-Mosharraf SS. Socio-demographic Status & Associated Risk Factors of the Stroke Patient's in a Tertiary Care Hospital of Bangladesh. Anwer Khan Modern Medical College Journal. 2013;4(2):18-22.
5. Ravenell J, Leighton-Herrmann E, Abel-Bey A, DeSorbo A, Teresi J, Valdez L, et al. Tailored approaches to stroke health education (TASHE): study protocol for a randomized controlled trial. Trials. 2015;16(1):176.
6. Al-Oraibi S. Demographic characteristics of stroke patients in developing countries. Example from Jordanian government hospitals. Journal of Public Health and Epidemiology. 2012;4(5):110-6.
7. Farpour H, Mashhadiagha A, Edrisi F,Farpour S, Knowledge, attitude, and practice regarding stroke potential complications among stroke survivors' family members in Shiraz, Iran, Turk J Phys Med Rehabil. 2023 Mar; 69(1): 83–88.
8. Ashraf V, Maneesh M, Praveenkumar R, Saifudheen K, Girija A. Factors delaying hospital arrival of patients with acute stroke. Annals of Indian Academy of Neurology. 2015;18(2):162.
9. Rathore JA, Kango ZA, Nazir M, Mehraj A. Risk factors for stroke: a prospective hospital based study. Journal of Ayub Medical College Abbottabad. 2013;25(1-2):19-22
10. Sundström BW, Herlitz J, Hansson PO, Brink P. Comparison of the university hospital and county hospitals in western Sweden to identify potential weak links in the early chain of care for acute stroke: results of an observational study. BMJ open. 2015;5(9):e008228.
11. Costa VdSP, Guimarães PSR, Fernandes KBP, Probst VS, Marquez AdS, Fujisawa DS. Prevalence of risk factors for the occurrence of strokes in the elderly. Fisioterapia em Movimento. 2014;27(4):555-63.
12. Ragoschke-Schumm A, Walter S, Haass A, Balucani C, Lesmeister M, Nasreldein A, et al. Translation of the 'time is brain'concept into clinical practice: focus on prehospital stroke management. International Journal of Stroke. 2014;9(3):333-40.
13. Zewdie A, Debebe F, Kebede S, Azazh A, Laytin A, Pashmforoosh G, et al. Prospective assessment of patients with stroke in Tikur Anbessa Specialised Hospital, Addis Ababa, Ethiopia. African Journal of Emergency Medicine. 2018;8(1):21-4.
14. Soto-Cámara R, González-Santos J, González-Bernal J, Martín-Santidrian A, Cubo E, Trejo-Gabriel-Galán JM. Factors Associated with Shortening of Prehospital Delay among Patients with Acute Ischemic Stroke. Journal of Clinical Medicine. 2019;8(10):1712.
15. Khan MI, Khan JI, Ahmed SI, Ali S. The epidemiology of stroke In a developing country (Pakistan). Pakistan Journal of Neurological Sciences (PJNS). 2019;13(3):30-44
16. Gynnild MN, Hageman SHJ, Dorresteijn JAN, Spigset O, Lydersen S, Wethal T, et al. Risk Stratification in Patients with Ischemic Stroke and Residual Cardiovascular Risk with Current Secondary Prevention, Clin Epidemiol. 2021; 13: 813–823.
17. Arulprakash N, Umaiorubahan M. Causes of delayed arrival with acute ischemic stroke beyond the window period of thrombolysis.

Journal of family medicine and primary care. 2018;7(6):1248
18. Mellor RM, Bailey S, Sheppard J, Carr P, Quinn T, Boyal A, et al. Decisions and delays within stroke patients' route to the hospital: a qualitative study. Annals of emergency medicine. 2015;65(3):279-87.
19. Al Khathaami AM, Mohammad YO, Alibrahim FS, Jradi HA, Factors associated with late arrival of acute stroke patients to emergency department in Saudi Arabia, SAGE Open Medicine December 2018, 6(2018):1-6
20. Wang R, Wang Z, Yang D, Wang J, Gou C, Zhang Y, et al. Early Hospital Arrival After Acute Ischemic Stroke Is Associated With Family Members' Knowledge About Stroke, Frontiers in Neurology, May 2021, 12:652321.