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Original Article

Demographic and Clinical Profile of the Patients of Cerebral Stroke Treated under the Department of Neurology in a Tertiary Level Hospital

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ABSTRACT

Introduction: *Cerebral stroke is regarded as one of the major causes of death and disability in most developed and developing countries of the present world including Bangladesh. It occurs due to thrombosis or embolism that obstructs the flow of blood towards the brain; this mostly results in a condition where there is a death of brain tissue, medically referred to as infarction.* ***Objective:*** *This paper aimed to analyze the demographic and clinical characteristics of patients with cerebral stroke treated under the department of Neurology at a tertiary level hospital in Bangladesh.* ***Methods & Materials:*** *This was a descriptive type of cross-sectional study conducted at the Department of Neurology in Chittagong Medical College and Hospital, Chattrogram, Bangladesh during January, 2024 to June, 2024. A series of 93 confirmed diagnosed cases of cerebral stroke were included in this study using consecutive sampling method.* ***Results:*** *A series of 93 confirmed diagnosed cases of cerebral stroke were included in this study. Among the study subjects, the most*

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frequent 68 (73.3%) had infarcts, followed 21 (22.58%) intracerebral hemorrhage and 4 (4.30%) subarachnoid hemorrhage. ***Conclusion:*** *This study investigated that infarcts (73.3%) were the most common stroke type, primarily affecting males (55.9%) aged 62-71 years, with 71% of patients from rural areas. Hypertension (64.5%) and diabetes (54.83%) were the most frequent comorbidities, while hemiplegia (88.17%) and aphasia (39.78%) were the dominant clinical presentations. These findings highlight the need for targeted interventions in high-risk groups.*

Keywords*: Demographic, Clinical, Profile, Cerebral, Stroke, Patients, Treated, Neurology, Infracts.*

INTRODUCTION

Cerebral stroke is regarded as one of the major causes of death and disability in most developed and developing countries of the present world including Bangladesh. It occurs due to thrombosis or embolism that obstructs the flow of blood towards the brain; this mostly results in a condition where there is a death of brain tissue, medically referred to as infarction. Ischemic strokes account for 85% of all strokes; therefore, it is the most common type in the globe[1]. Incidence is anticipated to increase with older populations and increased prevalence of cardiovascular risk factors, especially in low-resource settings[2]. Therefore, the demographic and clinical profile among patients presenting with stroke becomes very important for the estimation of the disease burden and proper strategies of prevention and treatment. In addition, the outcomes in stroke will be influenced by a number of factors, including age, sex, socioeconomic status, and comorbid conditions such as hypertension, diabetes, and hyperlipidemia[3]. In particular, hypertension is the most important modifiable risk factor, accounting for about 50% of the global stroke burden[4]. Bangladesh, like many developing nations, faces a significant challenge in managing stroke due to limited healthcare resources, lack of public awareness, and delayed access to treatment. Studies have shown that rural population are disproportionately affected, with reduced access to specialized stroke care and higher rates of mortality and disability[5]. Our health system is primarily focused on infectious diseases, leaving non-communicable diseases like stroke under-prioritized [6]. Despite advances in acute stroke management, such as the use of thrombolysis and mechanical thrombectomy, many patients in Bangladesh present late to hospitals, reducing their chances of receiving time-sensitive interventions[7]. This delay in presentation is often due to a lack of awareness about stroke symptoms and the need for urgent medical care, particularly in rural and underserved areas[8]. Therefore, this study aimed to analyze the demographic and clinical characteristics of patients with cerebral stroke treated under the department of Neurology at a tertiary level hospital in Bangladesh. Such profiles shall help in the identification of high-risk groups of

stroke patients and form the basis for targeted prevention and treatment strategies for stroke patients in Bangladesh.

METHODS & MATERIALS

This was a descriptive type of cross-sectional study conducted at the Department of Neurology in Chittagong Medical College and Hospital, Chattrogram, Bangladesh during January, 2024 to June, 2024.Written informed consent was obtained from the patients' legal guardian or care givers and a series of 93 confirmed diagnosed cases of cerebral stroke were included in this study using consecutive sampling method. The diagnostic procedure involved neuroimaging (CT scans) results, which specified the type of stroke . The patients' demographic, clinical and laboratory records were reviewed and the data were collected using a pre-structured questionnaire and a case record form. The collected data were methodologically arranged and entered into computer for analysis. The data were analyzed using Statistical Package for Social Sciences (SPSS) software, version 23.0. Descriptive statistical analysis were performed and the results were presented in tables and charts as frequency and percentage. The inclusion and exclusion criteria of this study were as follows:

Inclusion Criteria:

- Age: 32 years and above
- Gender: Both male and female
- Patients must have a confirmed diagnosis of cerebral stroke
- Willingness to participate in the study.

Exclusion Criteria:

- Non-diagnosed cases of cerebral stroke.
- Patients with incomplete medical records.
- Patients with previous stroke history.

RESULTS

Table I presents the demographic characteristics of the study patients. The most frequent 29(31.2%) patients were between 62-71 years, followed by 25 (26.9%), 52-61 years, 21(22.6%), 42-51years, 12(12.9%), 72-80 years and 6(6.5%), 32-41years. The mean age of the patients was 59.24±11.44 years. The sex distribution showed that the majority of the patients 52(55.9%) were male and 41(44.1%) were female.

Table – I: Distribution of the Study Patients by Age and Sex (*n*=93)

	Frequency	Percent
Age group(years)		
32-41	6	6.5
42-51	21	22.6
52-61	25	26.9
62-71	29	31.2
72-80	12	12.9
Age (Mean±SD)	59.24±11.44	
Median	60	
Mode	65	
Sex		

Male	52	55.9
Female	41	44.1

Table II presents Residential, educational, employment status of the study patients. Regarding residential status, 66 (71.0%), resided in rural areas, followed by 27 (29.0%) were from urban areas. In terms of educational qualifications, the most frequent 35(37.63%) patients' educational qualification was SSC followed by 27 (29.0%), primary-level education, 15 (16.1%) completed SSC, 18(19.35%) HSC, graduation 8 (8.60%) and post-graduation 5(5.37%). Employment status showed that most frequent, 25 (26.88%) patients were self-employed followed by 21 (22.56%) farmers, 11 (11.82%) businessmen 23(24.73%) housewife, 8(8.60%) teacher and 5(5.37%) government employee.

Table – II: Distribution of the Study Patients by Residence, Education and Profession (*n*=93)

	Frequency	Percent
Residential status		
Urban	27	29
Rural	66	71
Educational qualities		
Primary level	27	29
SSC	35	37.63
HSC	18	19.35
Graduation	8	8.60
Post-Graduation	5	5.37
Profession		
Government employee	5	5.37
Teacher	8	8.60
Self-employed	25	26.88
Farmer	21	22.58
Businessman	11	11.82
Housewife	23	24.73

Table III presents the socio-economic status of the study patients. Among the 93 patients, the most frequent 43 (46.23%) belonged to the middle-class society, followed by 37 (39.78%) lower class, 13(13.975) upper class.

Table – III: Distribution of Socioeconomic Status of the Study Patient (*n*=93)

Socioeconomic status	Frequency	Percent
Upper	13	13.97
Middle	43	46.23
Lower	37	39.78

Table IV presents the comorbidity results of the study patients. The most common comorbidity was hypertension (HTN) which includes 60 (64.5%) patients, followed by diabetes mellitus (DM) in 51 (54.83%) patients, hypercholesterolemia in 28 (30.10%) patients, cardiovascular disease in 15 (16.12%) patients, hypercholestorel in 5 (5.37%) patients.

Table – IV: Distribution of Comorbidities Among the Study Patient (*n*=93)

Comorbidity	Frequency	Percent
Diabetes Mellitus (DM)	51	54.83
Hypertension (HTN)	60	64.50
Hypercholestorelemia	28	30.10
Cardiovascular disease	15	16.12
Hypercholestorel	5	5.37

Table V presents the clinical presentation of the study patients. The most common clinical feature was hemiplegia, occurring in 82 (88.17%) patients, followed by aphasia in 37 (39.78%) patients, gait disturbance and vertigo were each reported in 20 (21.50%) patients, vomiting in 18 (19.35%), and headache in 8 (8.60%) patients.

Table – V: Distribution of Clinical Presentation Associated with the Study Patients (*n*=93)

Clinical Presentation	Frequency	Percent
Hemiplegia	82	88.17
Gait disturbance	20	21.50
Vertigo	20	21.50
Aphasia	37	39.78
Vomiting	18	19.35
Headache	8	8.60

Table VI presents the distribution of diagnosed cerebral stroke among the study patients. The majority, 68 (73.3%) patients had infarcts, followed by 21 (22.58%) had intracerebral hemorrhage and 4 (4.30%) had subarachnoid hemorrhage

Table – VI: Diagnosis of Cerebral Stroke among the Study Patient by CT scan Reports (*n*=93)

Diagnosis	Frequency	Percent (%)
Infarcts	68	73.3
Intracerebral hemorrhage	21	22.58
Subarachnoid hemorrhage	4	4.30

DISCUSSION

A total of 93 patients who were diagnosed to have cerebral stroke were included in this study. Among the study subjects, the most frequent 68 (73.3%) had infarcts, followed 21 (22.58%) intracerebral hemorrhage and 4 (4.30%) subarachnoid hemorrhage. Another study reported 116 (77.33%) patients had cerebral infarction and 15 (10.33%) patients had intracerebral hemorrhage which is almost similar to our study[9]. Among these three types of stroke patients, the most frequent age group was 62-71 years which includes 29(31.2%) patients. The mean age of the study subjects was 59.24±11.44 years. These results of this study signifies that the aged between 62-71 years are more

vulnerable to stroke than that of earlier age groups and at the same time people around 60 years may averagely fall a victim different type of stroke. In this study, the male dominance was observed in the occurrence of cerebral stroke 52 (55.9%), which is comparably higher than their counterpart female 41(44.1%) because the life style and habits may differ between male and female. Another study found that the mean age was 51.12 ± 16.43 years, and reported male predominance (65.7%) which is almost in the lineage of our study[10]. This study observed the majority of the patients 66 (71 %), were from rural areas of Bangladesh and at the same time, the majority of the people 35(37.63%) had SSC level educational qualification. These findings of this study indicates that the rural people having less educational qualification may have more chance got stroked than the urban well educated people because the urban people are more conscious regarding health issues and they have easy access to health care than that of rural people. Regarding these issues another study found more than half of the patients were employed (*n*=51, 52.6%), while most of the participants had no formal education (39, 44.2%)[11]. This study observed the most frequent 43 (46.23%) belonged to the middle-class society. This indicates that the people of middle income of Bangladesh are adversely affected with different types of strokes. This study also found that the most common comorbidity associated with the study patients was hypertension (HTN) which includes 60 (64.5%) patients, followed diabetes mellitus (DM) in 51 (54.83%) patients, hypercholesterolemia in 28 (30.10%) patients, cardiovascular disease in 15 (16.12%) patients and hypercholestorel in 5 (5.37%) patients. This observation correlated closely with other studies[12-14]. But the incidence of diabetes mellitus was found to be higher (52%) in our study group. These results of this study revealed that among the associated diseases with the patients, the hypertension and diabetes mellitus played a significant role in the incidence of cerebral stroke among the study subjects because these two are the common risk factors of stroke. This study finally found that the most common clinical presentation among the study subjects was hemiplegia in 82 (88.17%) patients, followed aphasia 37 (39.78%), gait disturbance and vertigo 20 (21.50%), vomiting18 (19.35%), and headache in 8 (8.60%) patients. These findings of this study can claim that hemiplegia is the most common symptom of cerebral stroke patients in Bangladesh. These findings of this study are persistent with some other studies[15-20].

Limitations of the Study

This s was a single center study with a limited sample size conducted over a short study period. Therefore, the results of this study may not reflect of the whole country.

Conclusion

This study investigated that infarct (73.3%) were the most common type of stroke observed among the study subjects within the age group 62-71

years. Males were more frequently affected (55.9%), and a significant portion of the patients (71%) were from rural areas. The most common comorbidities were hypertension (64.5%) and diabetes mellitus (54.83%), and the most prevalent clinical presentations included hemiplegia (88.17%), aphasia (39.78%), and gait disturbances (21.50%). These findings highlight the need for targeted interventions in high-risk groups.

Recommendations

To decrease stroke rates and improve recovery, it's important to better manage high blood pressure and diabetes, especially in middle-aged adults. Providing more rehabilitation for stroke survivors and raising awareness about stroke risks factors may also help improve stroke patients' outcomes.

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Conflict of Interest

The authors declare no conflict of interest.

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