ORIGINAL ARTICLE

Socio-demographic Status & Associated Risk Factors of the Stroke Patient's in a Tertiary Care Hospital of Bangladesh

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ABSTRACT

Stroke is the most common neurological emergency. A total number of 100 randomly selected, clinically and CT proven acute stroke patients were studied at medicine units of Dhaka Medical College Hospital. Socio-demographic data and major risk factors or co-morbid conditions among acute stroke patient were identified and correlated. Out of 100 patients 29% were in between 51-60 years age group & 72% were male and 28% were female patients. In this series 24% were illiterate. Of the literate group 39% went to primary school, 20% completed SSC, 8% completed HSC, 5% completed graduation and only 4% completed post-graduation. Majority of the patients were unemployed (22%). Other was businessman (20%), housewife (19%) and cultivator (16%). 63% percentage of the patients from low income group, which was followed by middle income group (33%). Majority 53% patients had Ischaemic stroke, 45% Intracerebral haemorrhage (ICH) and only 2% had Subarachnoid haemorrhage (SAH). 77% of patient had history of hypertension, 22% Diabetes mellitus, 20% Dyslipidaemia, 13% Previous Stroke, 27% Ischaemic heart disease. Out of 77 hypertensive stroke patients 37(48.05%) had haemorrhagic stroke & 40(51.94%) had ischemic stroke.

Key words: Stroke, socio-demographic data, co-morbidity

Introduction

Stroke is the most common neurological emergency[1]. Stroke is the third most common cause of death in developed nations after ischaemic heart disease and cancer[2]. The AHA estimates that 780 000 strokes occur each year; 6,00,000 of these are new strokes, and 1,80,000 are recurrent strokes[3]. According to year book of the department of Medicine at DMCH (2009) 14.7% of total admission was stroke patients. In Bangladesh about 40%-50% of beds are occupied by stroke patients in the neurology ward. Stroke is a complex disease that requires the efforts and skills of all members of the multidisciplinary team[4]. A coordinated care of the stroke patient results in improved outcomes, decreased lengths of stay, and decreased costs[5]. In 2004, the cost of stroke was estimated at $53.6 billion (direct and indirect costs), with a mean lifetime cost estimated at $140 048.[6] Stroke is also a leading cause of functional impairments, with 20% of survivors requiring institutional care after 3 months and 15% to 30% being permanently disabled[6]. Stroke is a life changing event that affects not only the

person who may be disabled, but the entire family and other caregivers as well. Stroke patient die off either due to the primary disease or due to complications. But developing country like Bangladesh, low income status and low educational background are the great problem to manage stroke patients. Disease like stroke requires longer time and financial support to manage. But most of the stroke patients in tertiary level government hospital of Bangladesh come from low socioeconomic status. They have less awareness about the preventable risk factor of stroke[7]. Despite the advent of treatment of selected patients with acute stroke, effective prevention remains the best treatment for reducing the burden of stroke. The relationship between socio-demographic and clinical factor has been less well studied. In this study, I attempted to find out the common socio-demographic data and co-morbid conditions in acute stroke patients in a tertiary care hospital of Bangladesh.

Materials & Methods

In this descriptive cross sectional study, a total number of 100 randomly selected, clinically and CT proven acute stroke patients were studied from Jan 2010 to June 2010 at medicine units of Dhaka Medical College Hospital. Patient admitted within 48 hours of the onset of stroke with CT scan of the brain showing infarct or haemorrhage was enrolled for this study. Socio-demographic data and co-morbidity (risk factor) among acute stroke patient were identified and correlated. All data were collected in individual case record form. This was done by detailed history from patients or his / her relatives, complete physical examination and necessary investigations. Statistical analysis was carried out by using SPSS v16.0 Windows statistical software. Descriptive statistics were used for the interpretation of the findings. Informed and written consent obtained from all patients or their guardian. Formal Ethical Clearance was obtained from the Research Review Committee of Dhaka Medical College and Hospital.

Results

Out of 100 patients, majority 53% patients had ischaemic stroke, 45% had intracerebral haemorrhage and only 2% had subarachnoid haemorrhage.

Table 1: Distribution of patients in relation to age & sex group (n=100)

Age groups (years)	Sex of the patient		Total number (%)
	Male	Female	
21-30	1	1	2 (2)
31-40	8	3	11 (11)
41-50	13	5	18 (18)
51-60	21	8	29 (29)
61-70	16	6	22 (22)
71-80	7	4	11 (11)
81-90	5	0	5 (5)
91-100	1	1	2 (2)
Total	72	28	100 (100)

n: Number of the patient

Table 1 shows that maximum number of patients (29%) in this study were in between 51-60 years age group followed by (22%) between 61-70 years age group. The maximum number of male (21% & 16%) and female (8% & 6%) were also in the above age group respectively.

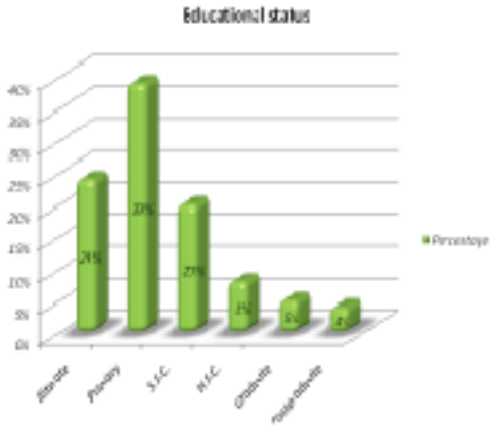

Figure 1. *Distribution of the patients in educational categories*

The above figure shows that in this series 24% were illiterate. Of the literate group 39% went to primary school, 20% completed SSC, 8% completed HSC, 5% completed graduation and only 4% completed post-graduation,

Table 2: Distribution of patients in occupational categories (n=100)

Occupation	Number of pati ents	Percentage (%)
Service	12	12.0
Business	20	20.0
Student	2	2.0
Labour	7	7.0
Cultivator	16	16.0
Housewife	19	19.0
Unemployed	22	22.0
Other	2	2.0
Total	100	100.0

n: number of patients

The above table shows that the majority patients were unemployed (22%). Other was business (20%), housewife (19%) and cultivator (16%).

Table 3: Economic status of the patients (n=100)

Income status	Number of patients	Percentage (%)
Low (Less than Tk. 60,000/=per annum)	63	63
Middle (From Tk. 60,000 Tk. 1,80,000/=per annum)	33	33
High (> Tk. 180,000)	4	4
Total	100	100%

N: number of patients, this income status classification was according to Bangladesh Bureau of Statistics.

Table 3 shows that the low income group (63%) omprises the major percentage of the patients, which was followed by middle income group (33%).

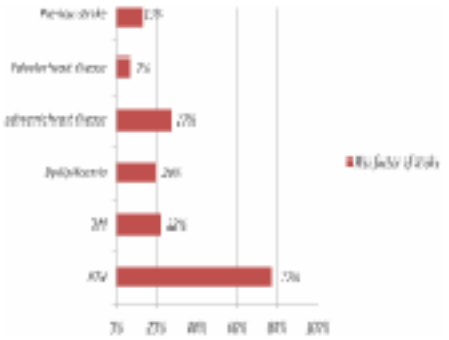

Figure 2 *Association of the risk factor of stroke*

Figure 2 shows that about 77% of patient had history of hypertension, 22% Diabetes mellitus, 20% Dyslipidaemia, 13% Stroke, 27% Ischaemic heart disease.

Table 4 Association of hypertension with different type of stroke (n=98)

Type of Stroke	Hypertensive (%)	Normotensive (%)	Total	p value
Haemorrhagic	37(48.05)	10(43.47)	47	
Ischaemic	40(51.94)	13(56.52)	53	>0.05
Total	77(100)	23(100)	100	

n: number of patient,

This table shows that out of 77 hypertensive stroke patients 37(48.05%) had haemorrhagic stroke & 40(51.94%) had ischemic stroke. Chi-square test ($\chi 2$) was done to measure the level of significant (p value). $\chi 2 = 0.068$, df =1, p = >0.05. There is no significant association between hypertension and type of stroke.

Table 5: Association of irregular antihypertensive medication with different type of stroke (n=75)

Antihypertensiv Medication	Hemorrhage (%)	Ischemic (%)	Total	p value
On irregular or no medication	28(75.67)	26(65)	54(70.12)	
On regular medication	9(24.32)	14(35)	23(29.87)	>0.05
Total	37(100)	40(100)	77(100)	

n: number of patient,

This table shows, out of 37 hypertensive haemorrhagic stroke patients 28(75.67%) were on irregular or no antihypertensive medications and among 40 hypertensive ischaemic stroke patients 26(65%) were on irregular or no antihypertensive medications. Chi-square test ((χ^2) was done to measure the level of significant (p value). $\chi^2 = 0.74$, df =1, p = >0.05. There is no significant association between taking of irregular or no antihypertensive medication and type of stroke.

Table 6: Association of stroke with Diabetes mellitus (n=22)

Diabetes mellitus	Number of patie	Percentage (%)	p value
Diabetic	22	22.00	
Non diabetic	78	78.00	>0.05
Total	100	100.00	

n: number of patient with diabetes

The table shows that, out of 100 stroke patients 22(22%) were diabetic. Chi-square test (χ^2) was done to measure the level of significant (p value). $\chi^2 = 0.74$, df =1, p = >0.05. There is no significant association between stroke and diabetes mellitus.

Discussion

Stroke incidence rises exponentially with increasing age. In this present study, (table-1) all the patients were grouped in eight age groups. Majority of the study subjects were above the 40 years of age. The maximum number of patients (29%) in this study were in between 51-60 years age group followed by (22%) between 61-70 years age group. The maximum number of male (21% & 16%) and female (8% & 6%) were also in the above age group respectively. Bevan H et al[8] in his study of stroke also found similar picture. A hospital based study done in DMCH showed that only 1% occurred in <20 years and 26% in 20-45 years and majority are above 45 years.[9] Bell et al 10 studied with stroke where most of the incidence of stroke was between the age of 50-69 years. Abdul Basher studied 100 patients of stroke in our country where highest incidence were between 5th to 7th decades. A study done by Chowdhury SZM[11] and Arif SM[12] also found peak incidence between 5th to 7th decades. So, the present study coincides with all above studies. 72% were male and 28% were female i.e., male incidence is 30% higher than female which coincide with international study. The present study coincides with the study of Chowdhury et al,[11] and Kurtzke,[13] where showed that frequency of stroke is 30% higher in men than women. CT scan findings of the studied patients show that majority 53% patients had ischaemic stroke, 45% had intracerebral haemorrhage and only 2% had subarachnoid haemorrhage. This study similar with study of Alam B et al,[14] they studied 1020 patients of stroke in DMCH. In their study the incidence of Ischaemic stroke was 57.84% and haemorrhagic stroke was 42.16%. But this study contradicts study of Hayee et al,[15] which was also done in DMCH where the incidence of ischaemic stroke was 83.89% higher rate of haemorrhagic stroke is also have been reported in number of hospital series in Asian countries. Higher rate of haemorrhagic stroke in this present hospital based study and previous Alam B et al[14] study in DMCH may be due to the acute admission is more related to the haemorrhagic stroke. In this series (figure-1) 24% were illiterate. Of the literate group 39% went to primary school, 20% completed SSC, 8% completed HSC, 5% completed graduation and only 4% completed post-graduation. Majority of the patients in our study were completed only primary school or illiterate because majority patients reported in DMCH came from low socioeconomic status. The low income group (63%) comprises the major percentage of the patients in our study (table-3). majority patients were unemployed (22%). Other was business (20%), housewife (19%) and cultivator (16%), which was similar to the study of Hakim M et al[16] in the medicine unit of BSMMU, BIRDEM, SSMCH and DMCH. Present study shows that (table-4,5) 77% ($p<0.05$) stroke patients were hypertensive. Among them 37(48.05%) hypertensive patients had haemorrhagic **stroke** and 40(51.94%) hypertensive patients had ischaemic stroke, but there was no statistic significant association between hypertension and type of stroke ($p>0.05$). Table-3.6 shows, out of 37 hypertensive haemorrhagic stroke patients 28(75.67%) were on irregular or no antihypertensive medications and among 40 hypertensive ischaemic stroke patients 26(65%) were on irregular or no antihypertensive medications. Chances of stroke were more among hypertensive patient on irregular medications, but chi-square (X^2) revealed no significant result ($p=>0.05$). This present study is almost similar with the stroke of Chowdhury et al,[11] who studied 74 hypertensive patients who suffered stroke and had shown that 34% of the patients were not aware that they were hypertensive and 60.7% were on irregular treatment. Bevan et al, 8 in his study showed that 31% of the patient with cerebral infarct had HTN. This present study correlates with the studies. Out of 100 stroke patients 22 were diabetic. Among diabetic 77.27% was previously diagnosed, 22.72% was newly diagnosed on admission. The Copenhagen stroke study has shown that in 1135 acute stroke patients, 233(20%) were suffering diabetes,[17] which is similar to our result.

Conclusion

Stroke is one of the foremost causes of morbidity, mortality and a socioeconomic challenge, more so in Bangladesh where health system including the rehabilitation is not within the reach of ordinary people. It is obvious that, this devastating condition not only affects the patient but also their family. This study may have not reflected the exact situation, but can give an utmost picture of the disease in a tertiary care hospital of Bangladesh. In a developing country like ours, the best policy for combating stroke is primary prevention. A much larger scale study must be done in various level of hospital in our country to find out the actual picture.

Conflict of Interest: We have no conflict of interest.

Acknowledgement: Dr. Ahmed Hossain & Dr. Yousuf Ur Rahman for their support.

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