

# Profile of Patients Receiving Stroke Rehabilitation in A Tertiary Care Hospital

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## Abstract

**Background:** Stroke rehabilitation is a program designed to help the stroke patients to overcome the disability. Few studies have evaluated the profile of stroke patients. To provide information about demographic data & disease pattern among the patients receiving stroke rehabilitation. **Methods:** A retrospective study was carried out in the Department of Physical Medicine and Rehabilitation (PMR), National Institute of Neuroscience and Hospital (NINSH) Dhaka, Bangladesh for the period of two year from 1<sup>st</sup> July 2013 to 30<sup>th</sup> June, 2015. **Results:** Total five thousand nine hundred thirty nine (n=5939) patients were studied, of which 62.33% were male and 37.67% were female. Maximum patients (27.93%) belong to 51-60 years of age. Major patients (52.67%) came from Dhaka city and most of the studied patients were housewife (25.43%). Largest disease group was ischaemic stroke (81.7%). Regarding service pattern, 69.59% patients received outdoor and 30.41% indoor services. Among clinical profile of stroke, 90.5% were first time onset, almost 99% suffered limb weakness, 24.03% speech problem and 32.6% face involvement. Maximum patients (58.8%) had history of multiple risk factors. **Conclusion:** Rehabilitation procedures in stroke patients can enable greater return of neurological functions and prevents complication, thereby improves long term outcome and quality of life.

**Key words:** Stroke; Rehabilitation; Profile of patients; PMR, NINSH.

## INTRODUCTION

Stroke is one of the leading causes of death and disability worldwide and more so in underdeveloped countries like Bangladesh, where health support system including rehabilitation is not expectedly available<sup>1</sup>. Stroke is a disease of the brain where there is sudden onset of mostly focal lesion due to occlusion or rupture of a cerebral blood vessel and its symptomatology should last for more than twenty four hours. The incidence of stroke is increasing in this country in comparison to developed country. Although stroke is a disease of the elderly but in our country it is more common in 5th and 6th decade of life<sup>2</sup>. There are several important modifiable risk factors (hypertension, diabetes mellitus, tobacco smoking and obesity) which contribute to its pathophysiology<sup>3</sup>. Stroke is always a medical emergency. So it should be addressed as early as possible. About 50% of the stroke patient may need treatment in the hospital. The ultimate objective is to rehabilitate the patient. The patient should be referred to the physical medicine expert as a part of rehab as early as possible<sup>2</sup>.

National Institute of Neuro-sciences (NINS) in Bangladesh was established with the vision of making this institute as the center of excellence not only in this country but also for others. It is a matter of pride that the institute has started functioning from September 2012. There are more than 15 departments<sup>4</sup>. Physical Medicine and Rehabilitation is one of them. Almost all the patients came to this department were referred from different departments of NINSH. From July 2013 to June 2015, total 5939 patients received stroke rehabilitation services.

## Objectives

To observe the pattern of stroke patients attending at the department of PMR in a tertiary level hospital. To identify demographic characteristics of stroke patients and to discuss the findings of this study with other available studies.

## MATERIALS AND METHODS

We undertook a retrospective review of the records at PMR Department of NINSH, Dhaka over a period of two year from 1<sup>st</sup> July 2013 to 30<sup>th</sup> June 2015 and determined the stroke diagnosis of attending patients. Information was extracted from the patients' records by means of a questionnaire assessing the participants' demographics and diagnoses. The subjects were enrolled on an individual basis, despite the varying number of visits by a given patient during the period of study.

Data analysis: After collection of the data in a standardized proforma, all the data were analyzed and presented in simple statistical percentage. MS Excel was used for presentation of outcome picture.

### Variables:

- Primary variables:
  - Stroke profile
- Secondary variables:
  - Age
  - Sex
  - Catchment area
  - Occupation

## RESULTS

**Table 1 :** Socio-demographic characteristics of stroke patients (n=5939)

	Characteristics	Number of patients	Percentage (%)
Sex	Male	3702	62.33
	Female	2237	37.67
Age (In years)	Below 40 years	568	9.56
	41-50 years	1047	17.63
	51-60 years	1659	27.93
	years	1562	26.30
	Above 70 years	1103	18.57
Catchment area (Residency)	Dhaka city	3128	52.67
	Outside Dhaka city	2811	47.33
Occupation of patient	Service holder	997	16.79
	Retired Service holder	868	14.62
	Housewife	1510	25.43
	Laborer	528	8.89
	Farmer	620	10.44
	Businessman	647	10.89
	Student	42	0.71
	Unemployed	381	6.42
	Others	346	5.83

**Table 2 :** Service provided

Serial Number	Disease	Number of patients	Percentage (%)
1	Outdoor services	4133	69.59
2	Indoor services	1806	30.41
	Total	5939	100%

**Table 3 :** Profile of stroke patients (n=5939)

	Characteristics	Number of patients	Percentage (%)	
Stoke type	Ischaemic	4852	81.70	
	Hemorrhagic	1087	18.30	
Stroke onset	First time	5375	90.5	
	Recurrent	564	9.5	
Parts of body affected	Hemiplegia/Hemiparesis	Right side	3083	51.91
		Left side	2693	45.34
	Tetraplegia/ Tetraparesis	47	0.79	
	Speech problem	1427	24.03	
	Face involvement	1936	32.6	
Factors associated with stroke	Others (paraplegia/paraparesis/monoplegia/monoparesis etc.)	116	1.95	
	Single risk factor (Diabetes mellitus/ Hypertension/Heart diseases /Hyperlipidaemia/Others).	989	16.65	
		Multiple risk factor	3492	58.80
		No risk factor	1458	24.55

Problems demanded for Rehabilitation of stroke patients were Limb weakness, Facial weakness, Speech problem, Swallowing problem, gait abnormality and activities of daily livings.

## DISCUSSION

A Uniform Data System (UDS) for Medical Rehabilitation is maintained in USA and published annually. No such system exists in Bangladesh<sup>5</sup>. In this study it has been tried to find out the age, sex, occupation, residency and disease pattern of the stroke patients attending in the Department of PMR.

In this study, 62.3% of patients were male and 37.67% were female. A study conducted by Eapen RP et al showed cerebrovascular stroke are more common in males (67%) than females (33%)<sup>6</sup>. Vaidya CV et al found 59.7% males and 40.3% females. Kapoor D et al stated 67.9% were males and 32% were females<sup>7,8</sup>. Hossain AM et al showed 74% males and females 26% in their study<sup>9</sup>.

In our study, 9.56% of patients were under 40 years of age, 17.63% were 41-50 years, 27.93% were 51-60 years, 26.3% were 61-70 years and 18.57% were above 70 years of age. Kundu NC et al showed 16% under 40 years of age, 19% were 40-49 years, 11% were 50-59 years, 30% were 60-69 years and 24% were above 70 years of age<sup>10</sup>. Eapen RP et al showed incidence of stroke is maximum in 51-60 years which comprises 28%

of total patients<sup>6</sup>. Vaidya CV et al found 15.6% under 40 years of age, 17.2% were 41-50 years, 22.3% were 51-60 years, 32.8% were 61-70 years and 19.3% were above 70 years of age<sup>7</sup>. Hossain AM et al studied that 6% under 40 years of age, 14% were 41-50 years, 39% were 51-60 years, 30% were 61-70 years and 11% were above 70 years of age<sup>9</sup>.

This study stated that occupations of patients were housewife (25.43%) labourer (8.89%) serviceman (16.79%) retired serviceman (14.62%) farmer (10.44%) businessman (10.89%) student (0.71%). Hossain AM et al enlisted housewife (16%) retired (21%) serviceman (28%) agriculture (9%) businessman (17%) others (9%)<sup>9</sup>.

Most of the studied patients were coming from Dhaka city (52.67%) and from outside Dhaka city it was 47.33%. Probably this situation may be due to frequent use of bus for movement and journey. Masud MH et al showed that urban patients were 75.36% and rural patients were 24.63%<sup>11</sup>. On the other hand, for the metropolitan area patients feel easy to reach in the hospital. Shakoor MA et al showed in their study that most of the patients (65.7%) used bus for movement and journey<sup>12</sup>. Hossain AM et al showed that urban people were 54% and rural were 46%<sup>9</sup>. But, Kapoor D et al stated, of the total, only 8.5% patients belonged to urban area and 91.4% belonged to rural area<sup>8</sup>.

In the present study it was found that 69.59% patient received outdoor service and 30.41% indoor service. Uddin MMJ et al stated most of the patients 98.32% were referred from Outpatient Department (OPD) and only 1.68% patients were referred from indoor service<sup>13</sup>.

Among the disease pattern, first time onset of stroke was 90.5% and recurrent case was 9.5%. Vaidya CV et al found that previous history of cerebro-vascular accident 15%<sup>7</sup>. Hossain AM et al showed that among the stroke patients 9% had previous history of stroke<sup>9</sup>.

81.7% ischaemic and 18.3% hemorrhagic stroke were found in our study. Eapen RP et al showed 68% was ischaemic and 32% hemorrhagic stroke<sup>6</sup>. Vaidya CV et al found that 74.8% suffered ischemic stroke and 22.7% suffered hemorrhagic stroke followed by 2.5% were due to some primary brain malignancy or secondaries in brain<sup>7</sup>. Hossain AM et al showed that 61% was ischaemic and 18.3% hemorrhagic stroke<sup>9</sup>. Kundu NC et al found 37.5% patients developed hemorrhagic stroke and 62.5% patients suffered an ischemic attack<sup>10</sup>.

Most common clinical presentation was limb weakness either hemiplegia/hemiparesis (97.25%) of which 51.91% right side and 45.34% left side affected. Both side affected (Tetraplegia/tetraparesis) was 0.79%, speech problem 24.03%, face involvement 32.6% and others (paraplegia/ paraparesis/ monoplegia/ monoparesis etc) were 1.95%. Eapen RP et al showed hemiplegia with facial weakness 83%, speech abnormality 48%<sup>6</sup>. Vaidya CV et al found hemiplegia 48%, speech abnormality 25.1%, altered sensorium 13.1%<sup>7</sup>. Kapoor D et al stated weakness of limb present in 73%, mouth deviation 47.5%, speech abnormality 53%, altered sensorium 47.3%, monoparesis 0.02%<sup>8</sup>.

In present study, maximum patients (58.8%) had history of multiple risk factors, 16.65% had single risk factor and no risk factor was found in case of 24.55%. Kundu NC et al showed on the basis of risk factors 55% patients had multiple risk factors, 16% had single while no risk factor was found in 29% patients<sup>10</sup>. Chowdhury RN et al found that hypertension, diabetes, ischemic heart disease, dyslipidaemia and respiratory problem were significantly associated co-morbid conditions in stroke patients<sup>14</sup>.

From the above discussion, it is clearly demonstrated that the findings of the study performed in PMR department of NINSH is consistent with the findings of available studies.

### CONCLUSION

Stroke is one of the foremost causes of morbidity, mortality and a socioeconomic challenge. This is particularly true for developing countries like Bangladesh, where health support system including the rehabilitation system is not within the reach of ordinary people. This study may have not reflected the exact situation but gives an utmost picture of the disease.

### LIMITATIONS

This study is done in one tertiary level hospital of Bangladesh in a small population and it may not reflect the total scenario of patients getting treatment from Physical Medicine & Rehabilitation Department.

### RECOMENDATIONS

- i) A large scale multi-centered study should be performed in the country
- ii) A uniform data system should be constructed for stroke rehabilitation in Bangladesh.

### ACKNOWLEDGEMENT

We express deepest regards and a profound debt of heart full gratitude to Dr. Md. Khurshid Mahmood, Associate Professor and Head, Department of PMR, Professor M Badrul Alam, Joint Director and Professor Quazi Deen Mohammad, Director of NINSH, Dhaka. We would like to thanks our fellow colleagues, medical technologist and finally our family members for their kind cooperation and assistance in carrying out the study.

### DISCLOSURE

All the authors declared no competing interest.

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