

# Profile of Patients with Stroke in Western Region of Nepal: A Hospital based Retrospective Study

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## ABSTRACT

**Background:** Stroke is one of the most common cause of morbidity and mortality worldwide. Approximately 50-85 percent of strokes are due to ischemic cerebral infarction and 7-27 percent to intracerebral hemorrhage. Since the incidence of stroke is increasing in our country, the study aims to identify various factors associated with stroke.

**Materials and Methods:** This is a retrospective study of 86 patients admitted in A & B International Hospital, which is a private hospital located in Pokhara, Nepal from 1st January 2018 to 31<sup>st</sup> December 2019. The case notes were taken from hospital record section and relevant data extracted and analyzed. Approval from the hospital management was taken prior to collecting the case notes. Patients below 18 years of age, stroke due to trauma were excluded. The data were collected, and were analyzed using SPSS version 20.0 software

**Results:** Of the total 86 patients studied, the age range was from 36 years to 94 years with mean age of 64.3 years. Mean age in ischemic stroke was 66.7 years and in hemorrhagic stroke was 54.8 years. Stroke is more common in men than female (2.3:1 ratio). Ischemic stroke accounted for 80.2 percent of cases and hemorrhagic stroke for 19.2 percent. Most common presentation included limb weakness, facial deviation and speech abnormality. Most common vascular territory involved was MCA territory infarction and small vessel strokes.

**Conclusion:** Stroke is prevalent in our country and the incidence rises with age. Ischemic stroke is more prevalent than hemorrhagic stroke. Mean age of hemorrhagic stroke is lower than that of ischemic stroke and hypertension is most commonly associated risk factor for both types of stroke.

**Keywords:** hemorrhage, ischemia, profile, retrospective, stroke

## INTRODUCTION

The World Health Organization (WHO) definition of stroke is: “rapidly developing clinical signs of focal (or global) disturbance of cerebral function, with symptoms lasting 24 hours or longer or leading to death, with no apparent cause other than of vascular origin”.<sup>1</sup> Stroke is the second most common cause of death, accounting for 6.24 million deaths globally in 2015. It is also a leading cause of dependence and disability, ranked second worldwide.<sup>2</sup> Approximately 50-85 percent of strokes are due to ischemic cerebral infarction and 7-27 percent to intracerebral hemorrhage.<sup>3</sup> There are three main types of brain ischemia: Thrombosis, embolism and systemic hypo perfusion and two main subtypes of brain hemorrhage: intracerebral hemorrhage and subarachnoid hemorrhage.<sup>4</sup> The lifetime risk of stroke for adult men and women aged >25 years is 25 percent.<sup>5</sup> Stroke risk is decreasing in high income countries, while it is increasing in low income countries.<sup>6-8</sup>

In a prospective study conducted in tertiary hospital of Nepal found hypertension most common risk factor and the most common ischemic stroke groups were MCA stroke (39.4%) and small vessel stroke (17.2%). The most common type of hemorrhage being basal ganglia hemorrhage which was present in 15% of patients.<sup>9</sup> Most common risk factors are hypertension, diabetes, alcohol, smoking and dyslipidemia among elderly stroke patients.<sup>10-11</sup> Since the incidence of stroke is increasing in our context, the study aims to identify various factors associated with stroke.

## MATERIALS AND METHODS

This is a retrospective study of 86 patients admitted in A & B International Hospital, which is a private hospital located in Pokhara, Nepal from 1st January 2018 to 31st December 2019. The case notes were taken from hospital record section and relevant data extracted and analyzed. Approval from the hospital management was taken prior to collecting the case records.

### Exclusion criteria:

Patients below 18 years of age  
Stroke due to trauma.

Patients' medical records which were not showing CT or MRI confirmed diagnosis

The data were collected, and were analyzed using SPSS version 20.0 software.

## RESULTS

86 cases of stroke case records admitted in A & B International Hospital, which is a private hospital located in Pokhara, Nepal from 1<sup>st</sup> January 2018 to 31<sup>st</sup> December 2019 were studied and evaluated for clinical profile and risk factors.

### Incidence of age

The age range was from 36 years to 94 years with mean age of 64.3±12.7 years. Mean age in ischemic stroke was 66.7±11.8 years and in hemorrhagic stroke was 54.8±11.8 years.

**Table 1: Age and Sex distribution**

Age(Years)	Male	Female	Total
31-40	2	0	2 (2.3%)
41-50	8	5	13 (15.1%)
51-60	16	1	17 (19.7%)
61-70	17	8	25 (29.0%)
71-80	13	9	22(25.5%)
≥81	4	3	7 (8.1%)
Total	60 (69.8%)	26 (30.2%)	86 (100%)

Table 1 shows that stroke prevalence is more prevalent in males (69.8%) than in females (30.2%). Most of the patients fall in age group 60-80 years.

**Table 2: Associated risk factors**

Risk factors	Number (N=86)	Percentage
Hypertension	62	72.1
Smoking	42	48.8
Dyslipidemia	22	25.6
Diabetes mellitus	15	17.4
Atrial fibrillation	11	12.8
Past history of CAD	4	4.7

Table 2 shows that hypertension is the most common risk factor present in the studied population.

**Table 3: Symptoms at presentation**

Symptoms	Number (N=86)	Percentage
Hemiparesis	81	94.2
Facial deviation	58	67.4
Speech abnormalities	58	67.4
Headache	8	9.3
Vomiting	7	8.1
Loss of consciousness	7	8.1
Ataxia	1	1.2

Table 3 shows that most of the patients presented with hemiparesis, facial deviation and speech abnormalities.

**Table 4: Types of Stroke**

Type of stroke	Number (N=86)	Percentage
Ischemic		
Thrombotic	58	67.4
Cardioembolic	11	12.8
Hemorrhagic	17	19.8

Table 4 shows that ischemic stroke which is thrombotic in origin is the most common type in the studied population.

**Table 5: Topographic or vascular territory distribution of stroke**

Type of stroke	Site or vascular territory	Number (N=86)	Percentage
Ischemic	MCA territory and small vessel strokes	66	76.8
	ACA territory	1	1.2
	PCA territory	2	2.3

Hemorrhagic	Intra parenchymal	6	7.0
	Thalamus	4	4.7
	Basal ganglia	4	4.7
	Putamen	2	2.3
	Brain stem	1	1.2

Table 5 shows that MCA territory and small vessel strokes is most common in ischemic stroke and common sites of hemorrhagic stroke are intra parenchymal, thalamus, basal ganglia and putamen.

## DISCUSSION

The age range was from 36 years to 94 years with mean age of  $64.3 \pm 12.7$  years. Mean age in ischemic stroke was  $66.7 \pm 11.8$  years and in hemorrhagic stroke was  $54.8 \pm 11.8$  years. This is similar to the mean age of stroke patients  $65.98 \text{ years} \pm 10.69$  done in a prospective cross sectional study in Manipal Teaching Hospital, Pokhara from November 2007- October 2010.<sup>12</sup> In this study majority of stroke patients are in the age group of 60 –80 years with male predominance. Male sex being the risk factor is also seen in the studied population. Premenopausal women have a lower frequency of atherosclerosis than men of similar age unless they have major stroke risk factors. Even after adjusting for age, the incidence of atherosclerotic stroke is four times higher in men.<sup>13</sup> Young stroke (<45 years) comprised of 8.1 percent of all patients in this study.

Most common risk factors associated are hypertension in 62 patients (72.1 percent), smoking in 42 patients (48.8 percent) and dyslipidemia in 22 patients (25.6 percent). These findings are similar to a prospective cross sectional study in Manipal Teaching Hospital in which associated risk factors are hypertension (61.2 percent), smoking (59.4 percent), elevated TG (23.0 percent), elevated cholesterol (7.5 percent).<sup>12</sup> Diabetes is seen to be associated in 17.4 percent of patients, past history of CAD in 4 patients (4.7%). Cigarette smoking has well-established risk factor for all forms of stroke and other vascular events. The risk of ischemic stroke decreases over time after smoking cessation. In one series of middle-aged women, for example, the excess

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risk among former smokers largely disappeared two to four years after cessation.<sup>14-15</sup>

Most common symptoms are hemiparesis in 81 patients (94.2 percent), facial deviation (67.4 percent) and speech abnormality (67.4 percent) and type of stroke observed was ischemic (80.2 percent) and hemorrhagic (19.8 percent). A retrospective study of all new patients managed for stroke in the medical ward of GMERS medical college and hospital, Gandhinagar, Gujarat from January 1, 2012 to December 31, 2013 showed hemiparesis most common symptom in 72.6 percent patients, ischemic stroke (74.6 percent) and hemorrhagic (22.9 percent).<sup>16</sup>

The study showed that most common vascular territory in ischemia is MCA territory and small vessel strokes and most common sites of hemorrhagic stroke are intraparenchymal, thalamus, basal ganglia and putamen as seen in most of the studies.

## CONCLUSION

Stroke is prevalent in our country. The incidence rises with age. Ischemic stroke is more prevalent than hemorrhagic stroke. Mean age of hemorrhagic stroke is lower than that of ischemic stroke and hypertension is most commonly associated risk factor for both types of stroke. So proper hypertension treatment and BP control seems to be the most important preventive strategy for stroke.

## Limitations of the study

1. Sample size is small
2. Some data in the case notes might not be accurate
3. Speech abnormality includes slurring of speech and aphasia. Incidence of aphasia could not be elicited.

**Conflict of interest: None**

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