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A Study to Assess the In-Hospital Outcome of Ischemic Stroke Patients.

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ABSTRACT

Vascular disorders accounts for the major cause of mortality in the world. Stroke is the second most frequent cause of death worldwide, accounting for 6.2 million deaths of total. It is ranked after heart disease and before cancer. The present study was undertaken to assess the in-hospital outcome of ischemic stroke, to compare the initial stroke severity with outcome, to assess the mortality in patients with ischemic stroke. We conclude that there is significant association between therapeutic compliance and outcome of ischemic stroke, early identification and management should be considered for patients with ischemic stroke. The study is limited to patients admitted in stroke ICU of Little Flower Hospital, Angamaly so generalization is limited. Hence we recommend further study with longer follow up with higher sample size to get better perceptive on functioning and disability after ischemic stroke

Keywords: ischemic stroke, Vascular disorders.

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INTRODUCTION

Vascular disorders accounts for the major cause of mortality in the world. Stroke is the second most frequent cause of death worldwide, accounting for 6.2 million deaths of total [1]. It is ranked after heart disease and before cancer [2]. According to the World Health Organization (WHO), 15 million people suffer stroke worldwide each year. Of these, 5 million die, and another 5 million are left permanently disabled [3]. Stroke is a medical emergency and can cause permanent neurological damage, complications and death. A stroke, sometimes referred to as a cerebrovascular accident (CVA), is the rapid loss of brain function due to disturbance in the blood supply to the brain. This can be due to ischemia (lack of blood flow) caused by blockage (thrombosis, arterial embolism), or a hemorrhage.[4] As a result, the affected area of the brain cannot function, which might result in an inability to move one or more limbs on one side of the body, inability to understand or formulate speech, or an inability to see one side of the visual field. Risk factors for stroke include old age, high blood pressure, previous stroke or transient ischemic attack (TIA), diabetes, high cholesterol, tobacco smoking and atrial fibrillation. High blood pressure is the most important modifiable risk factor of stroke. The present study was undertaken to assess the in-hospital outcome of ischemic stroke, to compare the initial stroke severity with outcome, to assess the mortality in patients with ischemic stroke.

MATERIALS AND METHODS

The present study has been approved by institute ethics committee for human studies. A total of 50 patients admitted in Stroke ICU, Little Flower Hospital, Angamaly, were included in the study, after explaining the study to the participants, written informed assent from the participants was obtained.

Inclusion criteria

- Patients with ischemic stroke.

Exclusion criteria

- Patients who are not willing for treatment as prescribed by the neurologist.
- Patients discharged prematurely at request.

DEVELOPMENT AND DESCRIPTION OF THE TOOL [17, 19]

Tool 1:

Socio-demographic proforma include age, sex, type of stoke of patients admitted in Stroke ICU, Little Flower hospital, Angamaly.

Tool 2:

The National Institute of Health Stroke Scale (NIHSS) is a 42 point clinical Examination system that has become the standard clinical severity scale in most clinical trials.

Tool 3:

The Modified Ranking Scale is the stroke outcome measuring scale, which is a 6 point scale measuring the level of disability after stroke.

Tool 4:

Barthrel Index (BI)

Techniques:

➤ Schedule - for recording all reports available for the study.
➤ Neurological scales - for neurological examination
➤ Reports from medical records- for recording of investigations and other data of each patient.

Data analysis:

The collected data was coded and processed by using the statistical packages for social sciencessoftware 20.0. Descriptive analysis using standard statistical methods was performed. The tests used are frequencies, percentage and chisquare test.

RESULTS

Results are presented in table 1 to table 9 and figure 1.

Table 1: Frequency distribution and percentage of patients admitted in stroke ICU based on their age and sex. (N=50)

Socio-demographic characteristics	Frequency	Percentage
Age		
30-50 (young adults)	4	**8**
51-70 (middle adults)	18	**36**
71-90 (older adults)	28	**56**
Sex		
Male	29	**58**
Female	21	**42**

The table 1 shows that about half (56%) of the patients were between the age group of 71-90 (older adults). Approximately equal percentages of male and female were included in the study.

Table 2: **Frequency distribution and percentages of patients admitted in stroke ICU based on their clinical variables (type of ischemic stroke, therapeutic compliance, hemisphere affected and mortality in patients) (N=50)**

Clinical variables	Frequency	Percentage
Type of ischemic stroke		
Thrombotic	46	92
Embolic	4	8
Therapeutic compliance		
Good	37	74
Poor	13	26
Hemisphere affected		
Left	30	60
Right	17	34
Others	3	6
Mortality in patients		
Patients alive	47	94
Patients died	3	6

Table 2 shows that majority (92%) of the patients had thrombotic stroke and only 8% had embolic stroke. 74% of the patients had good therapeutic compliance while 26% had poor compliance. About 60% of the patients had Left sided stroke 34% had right sided stroke and 6 % had strokes in the other areas of brain.94% of patients were alive and 6% of patients were died during the study.

Table 3: The in-hospital outcome of ischemic stroke patients based on NIHSS. (N=50)

Scales	Frequency	Percentage
NIHSS		
Minor stroke	26	52
Moderate stroke	16	32
Severe stroke	8	16

Table 3 shows according to NIHSS, the outcome of the ischemic stroke patients as the 52% of patients had minor stroke, 32% had moderate stroke and 16% had severe stroke.

Table 4: Frequency distribution and percentage of in hospital outcome of patients based on MRS. (N=50)

In-hospital outcome based on MRS	Frequency	Percentage
No symptoms	14	28
No significant disability.	6	12
Slight disability	5	10
Moderate disability	10	20
Moderate – severe disability	7	14
Severe disability	5	10
Dead	3	6

The table 4 shows that 28% patients had no symptoms 12% had no significant disability, an equal percentage (10%) had severe and slight disability, 20% had severe disability 14% had moderate to severe disability and 6% patients were died.

Table 5: The frequency distribution and percentage of in-hospital outcome of patients based on BI. (N=50)

In hospital outcome based on BI	Frequency	Percentage
Total dependence	9	18
Severe dependence	5	10
Moderate dependence	10	20
Slight dependence	15	30
Independent	11	22

The table 5 shows that 30% of the patients had slight dependence, 22% were independent, 20% were moderate dependent, 10% were severe dependent and 18% were totally dependent.

Table 6: Association of outcome of stroke based on NIHSS with compliance among patients admitted to stroke ICU. (N=50)

Therapeutic Compliance	Outcome of stroke based on NIHSS			χ^2
	Mild	Moderate	Severe	22.06**
Good	26	9	2	
Poor	0	7	6	

** Significant at 0.01 level

Table 6 shows a chi square value of 22.06 (p<0.01) with Yates correction between therapeutic compliance and outcome of stroke based on NIHSS, which is much greater than that of table value 5.99 for a degrees of freedom 2 and level of significance 0.05, so the null hypothesis is rejected and it is interpreted that there exist significant association between therapeutic compliance and outcome of stroke based on NIHSS.

Table 7: Association of outcome of ischemic stroke based on NIHSS with sex among patients admitted to stroke ICU. (N=50)

Sex	Outcome of stroke based on NIHSS			χ^2
	Mild	Moderate	Severe	7.45
Male	19	8	2	
Female	7	8	6	

Table 7 shows a chi square value of 7.45 (p<0.05) with Yates correction between sex and outcome of stroke based on NIHSS, which is greater than that of table value 5.99 for a degree of freedom 2 and level of significance 0.05, so the null hypothesis is rejected and it is interpreted that there exist significant association between sex and outcome of stroke based on NIHSS.

Table 8: Association of outcome of ischemic stroke based on NIHSS with hemisphere affected among patients admitted to stroke ICU (n=50)

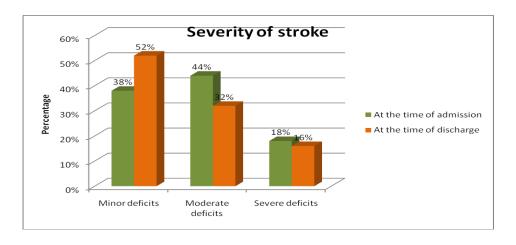| Area	Outcome of stroke based on NIHSS			χ^2
	Mild	Moderate	Severe	10.79
Left	10	13	4	
Right	11	3	3	
Other areas	5	0	1	

Table 8 shows a chi square value of 10.79 (p<0.05) with Yates correction between hemisphere affected and outcome of stroke based on NIHSS, which is greater than that of table value 9.49 for a degrees of freedom 4 and level of significance 0.05, so the null hypothesis is rejected and it is interpreted that there exist significant association between hemisphere affected and outcome of stroke based on NIHSS.

Table 9: Association of outcome of ischemic stroke based on NIHSS with age among patients admitted to stroke ICU. (N=50)

Age	Outcome of stroke based on NIHSS			χ^2
	Mild	Moderate	Severe	2.47
60 and below	14	16	2	
Above 60	12	10	6	

Table 9 shows a chi square value of 2.47 (p>0.05) with Yates correction between hemisphere affected and outcome of stroke based on NIHSS, which is less than that of table value 5.99 for a degrees of freedom 2 and level of significance 0.05, so the null hypothesis is accepted and it is interpreted that there exist no significant association between age and outcome of stroke based on NIHSS.

Figure 1: Percentage distribution of patients admitted to stroke ICU based on their severity of stroke at the time of admission and discharge

DISCUSSION

In the present study, the severity of ischemic stroke at the time of admission and outcome during discharge were compared using NIHSS and showed that, the percentage of patients with mild deficits of stroke at the time of admission was 38% and by the time of discharge it was increased to 52%. The percentage of moderate deficits was 44% at the time of admission and by the time of discharge, it was 32%. The patients with severe deficits were 18% at the time of admission and by the time of discharge it was 16%. The comparison of outcome of ischemic stroke patients with selected variables in the present study found that there exists significant association between therapeutic compliance, sex, hemisphere affected with outcome of stroke based on NIHSS. There is no association between age and outcome of stroke. Stroke is a heterogenous disease in which outcome is influenced by many factors. Demographic variables, risk factors, clinical examination findings, laboratory test results, and imaging studies all provide important insight regarding outcome.

CONCLUSION

We conclude that there is significant association between therapeutic compliance and outcome of ischemic stroke, early identification and management should be considered for patients with ischemic stroke.

Limitations

The study is limited to patients admitted in stroke ICU of Little Flower Hospital, Angamaly so generalization is limited. Hence we recommend further study with longer follow up with higher sample size to get better perceptive on functioning and disability after ischemic stroke.

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