A STUDY ON EVALUATION, ASSESSMENT AND AWARENESS OF POSSIBLE RISK FACTORS AND ITS APPROPRIATE TREATMENT OF STROKE PATIENTS USING NIHSS SCALE

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1. ABSTRACT

1.1 INTRODUCTION: There are chiefly two types of strokes – Ischemic and Hemorrhagic. Apart from these two TIA and subarachnoid forms are taken into consideration in our study. 1.2METHODOLOGY: This is a prospective, observational, and interventional study which being focussed on stoke patients. Using standard NIHSS scale a prospective study is being carried out to determine the risk factors in both in-patients and out-patients and using counselling sessions and community services they were interviewed by telephone then visited for noting the therapeutic outcome. 1.3RESULTS: A total of 97 cases of stroke were collected of which 66were males and 31 females, average stroke cases are found more in age group of 50yrs and above. Ischemic stroke was reported more in smokers (16), tobacco chewers (7), alcoholics (27), HTN (23), DM (6), and Dyslipidemia (42) patients followed by other types. According to NIHSS severity of score 3% (3)falls into >20 severe category with 3males followed by 21.6%(21) are moderate to severe(16-20) with 12males and 9 females, about 57.7%(56cases) were moderate(5-15) scoring with 40males and15 females, followed by 17.5%(17 cases) of <5minor stoke with 11males and 6females were found. A total of ischemic (59cases)stroke was reported high followed by TIA (14cases)followed by hemorrhagic equals subarachnoid(12cases) with a high frequency of moderate (5-15)stroke(56cases) followed by moderate to severe(16-20) stroke (21cases), followed by minor(<5) stroke(17cases) and severe(>20) stroke(3cases). 1.4 CONCLUSION: There is a significant improvement in patient condition from moderate to severe ranking to moderate ranking. The study concludes that the proper awareness on stroke reoccurrence and a detailed knowledge on stroke can decrease the incidence of recurrent attack.

KEY WORDS: Stroke, NIHSS ranking, Smokers, Alcoholics, HTN, DM, Dyslipidemics.

2. INTRODUCTION

The recommended standard WHO stroke definition is as follows:

"A focal (or at times global) neurological impairment of sudden onset, and lasting more than 24 hours (or leading to death), and of presumed vascular origin."

This clinical definition has four components:

• A neurological impairment or deficit

• Sudden onset, and

• Lasting more than 24 hours (or leading to death), and

• Of presumed vascular origin.[1]

Stroke is a heterogeneous disease with more than 150 known causes. Strokes can broadly be divided into:

Ischaemic

restricted or interrupted blood and therefore oxygen supply to an area of the brain.

Haemorrhagic

bleeding into an area of the brain, due to rupture of a blood vessel or abnormal vascular structure in the brain.

This distinction between haemorrhagic and ischaemic stroke is critical for stroke management and treatment decisions.

Subarachnoid haemorrhage

Rapidly developing signs of neurological

dysfunction and/or headache because of bleeding into the subarachnoid space (the space between the arachnoid membrane and the pia mater of the brain or spinal cord), which is not caused by trauma.

T.I.A

Haemorrhagic strokes can further be distinguished into intracerebral and subarachnoid strokes.[2]

2.1 Epidemiology

Global measurements undertaken by the WHO revealed an up to ten-fold difference in age-adjusted and sex-adjusted mortality rates and burden (measured in disability-adjusted life year loss rates (DALYs)) among countries. Both were considerably higher in low-income countries (North Asia, Eastern Europe, Central Africa, and South Pacific) compared to high-income countries (Western Europe, North America).

One study in India showed an annual incidence rate of 13/10, 00 population (15.2/10,000 in males and 10.8/10,000females).[3]

2.1.1 Prevalence

One in every 10 deaths is caused by stroke; thus it is the third most common cause of death in developed countries, exceeded only by coronary heart disease and cancer.

The prevalence of stroke in the US is about 7 million (3.0%).In China, the prevalence of stroke ranges between 1.8% (rural areas) and 9.4% (urban areas).

Worldwide, China has one of the highest rates of mortality (19.9% of all deaths in China), along with Africa and parts of South America.

2.1.2 Incidence

Worldwide, 15 million people suffer a stroke each year; one-third die and one-third are left permanently disabled. 795,000 new or recurrent strokes occur per year in the US, accounting for approximately 1 in 18 deaths. In Europe, the incidence of stroke varies from 101.1 to 239.3 per 100,000 in men and 63.0 to 158.7 per 100,000 in women.

Within 5 years of a stroke, over half of patients aged $\geq$ 45 years will die: 52% of men and 56% of women.[4]

2.1.3 Cost of stroke

The estimated direct and indirect cost of stroke in the US for 2010 was $ 73.7 billion.

The estimated cost of stroke in Europe in 2010 was approximately € 64.1 billion.

2.1.4 Burden of stroke

- Stroke incidence has declined by over 40% in the past four decades in high-income countries, but over the same period, incidence has doubled in low- and middle-income countries.

- Given that age is one of most substantiated risk factors for stroke, the ageing of the world population implies a growing number of persons at risk.

- According to the WHO, estimates the number of stroke events in EU countries, Iceland, Norway, and Switzerland is likely to increase from 1.1 million per year in 2000 to more than 1.5 million per year in 2025 solely because of the demographic changes.

The World Health Organization (WHO) predicts that disability-adjusted life years (DALYs) lost to stroke (a measure of the burden of disease) will rise from 38 million in 1990 to 61 million in 2020.[2]

The ability to name one symptom of stroke varied signifi- cantly between studies and ranged from 25% to 100%. The most commonly identified symptoms of stroke were numbness, weakness or paralysis, which ranged from 2%[13] to 97%; confusion, difficulty speaking or understanding speech, which ranged from 1%[13] to 100%; and dizziness, which ranged from 9% to 96%.[4]

2.2 Risk factors

Age is an important non-modifiable risk factor for stroke. 8 The population-based prevalence of hypertension, diabetes, cardio vascular dis- eases and dyslipidaemia is comparable among countries. This region is facing a double burden of tobacco expo- sure, with a15–20% prevalence of smoking and up to 40% of people using chewing tobacco. A large number of the chewing tobacco users are women. The prevalence of obesity is alarmingly high in Sri Lanka. Data related to atrial fibril- lation, carotid artery disease and intracranial disease are limited to India and Pakistan. Several non-traditional risk factors, such as use of water pipes, desi ghee (saturated fatty acids), chewable tobacco, and infectious causes might be factors that contribute to the high prevalence of stroke at a younger age. Russell viper snake bite has been reported as a cause of stroke from both India and Sri Lanka. Another interesting phenomenon that has been proposed as an aetiology of stroke is the squatting position during use of the toilet. Infections, acting directly or by causing vas- culitis (especially in the case of tuberculous meningitis), are other notable non-traditional risk factors for stroke in South Asia. Data related to stroke genetics in South Asian patients is limited to a few studies. Risk

factors for CVT, such as anaemia, hyper- homocysteinaemia, oral contraceptive pill use, alcohol- ism, and the procoagulant state, are being increasingly identified, whereas conventional risk factors such as the postpartum state are becoming more marginalized. A study involving a large sample of young women with stroke from Asia reported that 20% of stroke cases in young women were related to CVT.[5]

NIHSS is short for National Institutes of Health Stroke Scale. It was a commonly used yardstick for measuring the outcome of neurological deficits in stroke patients.[6]

The NIHSS, the standard initial neurological assessment, must be completed upon patient admission, every 24 hours, upon any change in neurological status, and at discharge. The NIHSS contains 11 sections and 13 items that allow clinicians to quickly assess patients for neurological changes. The scores range from 0 to 42, with 42 being the worst, indicating severe stroke. A score of less than 5 indicates mild impairment; 5 to 14, moderately severe impairment; 15 to 24, severe impairment; and higher than 25, very severe impairment.[7]

2.3 SCOPE OF STUDY

Contributing to this is the aging of the population, lack of knowledge regarding cerebro vascular disease and increased frequency of the risk factors, mainly hypertension .The main clinical manifestations are paralysis, dysarthria, aphasia, vision alterations, headache, numbness, dizziness or weakness. The public's knowledge of these warning signs is very important.[3]

Quick identification of these signs means a more efficient medical attendance within the windows of therapeutic opportunities. Rapid reperfusion with thrombolytic agents within 3 h of the onset of symptoms has been shown to be beneficial as such and to reduce morbidity and mortality. Rapid admission to a hospital after the onset of stroke depends partially on the level of knowledge of stroke.[3]

Stroke is a major non communicable disease. It is the most common cause of mortality and a significant cause of adult disability. Stroke may also compromise cognitive, mood, functional abilities and quality of life. It also results in caregiver burden and economic stress at individual, familial and national level.[6]

It has been reported that knowledge about the risk factors of stroke can help prevent stroke in the first place.[6]

This limited knowledge of the impact of diabetes on stroke risk is of concern, as diabetes increases the risk by as much as 10% in people of all ages. It is unclear why such knowledge is low as risk factors for stroke are well established (e.g. high blood pressure, high blood sugar, high cholesterol, obesity and smoking). Studies consistently show that many stroke survivors do not maintain adequate stroke risk management. In addition to general knowledge of stroke and its risk factors, recognition of stroke symptoms is important to stroke survivors, perhaps even the most important. Because stroke survivors are at an increased risk of recurrent stroke, it is critical that they understand stroke symptoms and the need to seek urgent care in the event of experiencing such symptoms. Data suggest that knowledge of stroke symptoms may be low in both the general population and among stroke survivors. Poor recognition of stroke symptoms has been attributed to delay seeking of treatment. That is to say, patients with a greater awareness of the early warning signs/symptoms of stroke are more likely to use the Emergency Medical Services (EMS), achieving shorter delays in seeking treatment and thereby improving their stroke outcomes. Collectively, knowledge of stroke (general information and understanding risk factors) and symptom recognition are critical to secondary stroke prevention. When considering the staggering annual number of strokes that occur worldwide, secondary stroke prevention is a significant global concern. For this, it is critical to have an understanding and perception of stroke, recurrent stroke risk and stroke risk factors, in order to develop strategies that facilitate the behavioural changes necessary for decreasing the likelihood of recurrent stroke.[7]

Delay in presentation to the emergency department outside of the various treatment time windows. for reperfusion therapy remains a significant barrier in the treatment of acute stroke. Population-based studies have shown that there is a lack of knowledge about established stroke risk factors and warning signs in the USA, Australia, South Korea, Canada, Brazil, Oman, India and Turkey. Thus, it is of great clinical and epidemiological interest to know the magnitude of the problem so that strategies can be adopted to minimize the unfavourable effects of stroke.[6]

In earlier studies NIHSS was found to have excellent specificity, sensitivity and accuracy in forecasting outcomes within 7 days after stroke.[12]

Unfortunately, the risk of a secondary stroke increases exponentially after an initial stroke. The short-term risk of recurrent stroke is 3–10% within two days after initial stroke and 9–

17% in the first 30 days after stroke. Even individuals experiencing a transient ischemic attack (TIA) or minor stroke have an 11% risk of stroke within 7 days of the event[11]

Most patients have recovery of neurological function after acute ischemic stroke, but Knowledge of the time course and extent of recovery is limited. Several recent clinical trials13 used the National Institutes of Health (NIH) Stroke Scale, a standardized measure of neurological function, to assess outcome after investigational therapy for acute stroke.[13]

The NIHSS, the standard initial neurological assessment, must be completed upon patient admission, every 24 hours, upon any change in neurological status, and at discharge. The nihss contains 11 sections and 13 items that allow clinicians to quickly assess patients for neurological changes. The scores range from 0 to 42, with 42 being the worst, indicating severe stroke. A score of less than 5 indicates mild impairment; 5 to 14, moderately severe impairment; 15 to 24, severe impairment; and higher than 25, very severe impairment.[7]

Literature review

1. Ralph L. Sacco et.al. has conducted research on "An Updated Definition of Stroke for the 21st Century: A Statement for Healthcare Professionals From the American Heart Association/American Stroke Association". The Stroke Council of the American Heart Association/American Stroke Association convened a writing group to develop an expert consensus document for an updated definition of stroke for the 21st century. Central nervous system infarction is defined as brain, spinal cord, or retinal cell death attributable to ischemia, based on neuropath logical, neuroimaging, and/or clinical evidence of permanent injury. Central nervous system infarction occurs over a clinical spectrum: Ischemic stroke specifically refers to central nervous system infarction accompanied by overt symptoms, while silent infarction by definition causes no known symptoms. Stroke also broadly includes intracerebral hemorrhage and subarachnoid hemorrhage. The updated definition of stroke incorporates clinical and tissue criteria and can be incorporated into practice, research, and assessments of the public health.[1]

2. P. Amarenco et.al. has conducted research study on "Classification of Stroke Subtypes "Regarding the 4 main categories of etiologies of ischemic stroke (i.e. atherothrombotic, small vessel disease, cardio embolic, and other causes), the classification should reflect the most likely etiology without neglecting the vascular conditions that are also found (e.g. evidence of small vessel disease in the presence of severe large vessel obstructions).[2]

4. STEPHANIE P. JONES et.al. has carried out review on "Stroke knowledge and awareness: an integrative review of the evidence". Study identified 169 studies of which 39 were included in the review. The ability to name one risk factor for stroke varied between studies, ranging from 18% to 94% when asked open-ended questions and from 42% to 97% when asked closed questions. The ability to name one symptom ranged from 25% to 72% when asked open-ended questions and from 95% to 100% when asked closed questions. When asked what action people would take if they thought they were having a stroke, between 53% and 98% replied that they would call the EMS. People generally obtained information about stroke from family and friends. Older members of the population, ethnic minority groups and those with lower levels of education had consistently poor levels of stroke knowledge.[4]

5. Sujata Das,carried out a research on" Shyamal Kumar Das Knowledge, attitude and practice of stroke in India versus other developed and developing countries" Study on KAP is essential to improve the awareness about stroke, early diagnosis and institution of appropriate management. In this article, we have reviewed the existing literature on this issue and tried to compare it with those of developed countries and suggested the measures we need to adopt in India to improve awareness and knowledge base.[5]

6. Afshin Borhani Haghighi et. al. has carried out a research study on" Knowledge and Attitude towards Stroke Risk Factors, Warning Symptoms and Treatment in an Iranian Population "The 385 participants completed the face-to-face interview. The most common risk factors for stroke identified by respondents were hypertension (342; 88.8%) and smoking (338; 87.8%). The most common warning signs of stroke were abdominal pain (370; 96.1%) and chest pain (338; 88.7%).

7. Charles Ellis et.al. has conducted a research on" Poststroke Knowledge and Symptom Awareness: A Global Issue for Secondary Stroke Prevention " Data from 18 studies spanning 8 countries and including 8,147 participants met the inclusion criteria for this review. These studies offer evidence that many stroke survivors do not have a greater knowledge of stroke despite their having experienced such a life-changing event.[7]

8. Erica B. Stern et.al has conducted a research study on "Community Education for Stroke Awareness: An Efficacy Study"ancova indicated that neither pretesting nor facilitation had a significant effect on posttest measures of knowledge. Paired t tests of groups receiving both the pretest and posttest demonstrated significant increase in knowledge (mean increase,

10.87%; P, 0.001). ancova indicated that these gains in knowledge were similar across subjects of different sex, race, age, and educational level. No significant differences could be ascribed to facilitation.[8]

9. Mohammad Wasay et. al. has carried out research on "Stroke in South Asian countries"The high prevalence of traditional risk factors, including hypertension, diabetes, dyslipidaemia and smoking, in these countries is alarming, and several nontraditional risk factors, such as water-pipe use, desi ghee, chewable tobacco, and infectious causes of stroke, are understudied. Access to tertiary stroke care is limited, and the use of tissue plasminogen activator is scarce. In addition, public and caregiver awareness of stroke risk factors and management is disappointing, and the interest of governments and policy makers in stroke is suboptimal. Interventions to reduce stroke burden and stroke-related mortality in South Asia should have a substantial impact at the global level.[9]

10. Vinh Phuong, Tran Van Huy. has carried out research on "Prediction of acute stroke progression by the National Institutes of Health Stroke Scale"Overall progression was noted in 28% of events (19/68). Applying Bayes' solution to the observed frequency of worsening, the greatest likelihood of predicting future patient progression occurred with NIHSS score of =7 and >7. Patients with an initial NIHSS score of =7 experienced a 13% (6/47) worsening rate versus those of an initial score of >7 with a 62% (13/21) worsening rate (P<0.01). 42.5% (20/47) of those with an initial score of =7 were functionally normal at 48 hours, whereas only 4.7% (1/21) of those with scores of >7 returned to a normal examination within this period ($\chi 2$, P<0.05).[10]

12. Raeefuddin ahmed et. al. has carried out a research on"Stroke scale score and early prediction on outcome after stroke" Of the 50patients enrolled in the study, 31(62%) were males,19(38%) were females, with age ranging from 45yr to 95years.Neurological impairment at the presentation was assessed by NIHSS. The score ranged between 2 to28.The functional outcome was evaluated on the 7th day using Barthrel Index(BI), which ranged from 0-80. NIHSS scale was found to be a good predictor of outcome in patients with ischemic stroke(p<0.001). Other factors like gender, hypertension,and heart diseases did not affect any functional recovery in such patients. Various factors were found to be significant for early prediction of stroke recovery. The NIHSS score was the strongest score of predictor after ischemic stroke. Age at the time of recovery was also found to be an important predictor for stroke recovery.[12]

13. R J Wityk et.al has carried out a research on "Serial assessment of acute stroke using the NIH Stroke Scale"The mean NIH stroke score for all patients im- proved significantly by 7 to 10 days and at last follow-up (average, 44 days). Major neurological improvement was seen in 5 of 41 patients (12%; 95% confidence interval [CI], 2% to22%) by 24 hours, 11 of 40 patients (28%; 95% CI, 14% to 41%) by 48 hours, and 19 of 37 patients (51%; 95% CI, 35% to 67%) by follow-up. The subgroup of patients with middle cerebral artery territory embolism showed a similar pattern of improvement; in contrast, patients with lacunar infarcts did not show significant change in scores during the study period. The score on admission did not correlate with the degree of subsequent improvement or deterioration.[13]

14. B. Stern et.al has conducted a research on " Community Education for Stroke Awareness: An Efficacy Study"ancova indicated that neither pretesting nor facilitation had a significant effect on posttest measures of knowledge. Paired t tests of groups receiving both the pretest and posttest demonstrated significant increase in knowledge (mean increase, 10.87%; P, 0.001). ancova indicated that these gains in knowledge were similar across subjects of different sex, race, age, and educational level. No significant differences could be ascribed to facilitation.[14]

40.Jean-Philippe Neau et.al . has conducted a research on"Awareness within the French population concerning stroke signs, symptoms, and risk factors"Most of the patients (62.3%) were able to name three risk factors but not to report the most important and less than half of the respondents were able to recognize one or more stroke warning sign. Predictors of adequate knowledge of both stroke risk factors and warning signs were similar and included age and sources of information (books, magazines and newspapers or family members or relatives who have suffered from a stroke or general practitioner).[40]

4. P. JONES et.al. has conducted a research on" Stroke knowledge and awareness: an integrative review of the evidence" we identified 169 studies of which 39 were included in the review. The ability to name one risk factor for stroke varied between studies, ranging from 18% to 94% when asked open-ended questions and from 42% to 97% when asked closed questions. The ability to name one symptom ranged from 25% to 72% when asked open-ended questions and from 95% to 100% when asked closed questions. When asked what action people would take if they thought they were having a stroke, between 53% and 98% replied that they would call the EMS. People generally obtained information about

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3. Nadir e et.al. has conducted a research on"Epidemiology of stroke in india" There is no evidence of a decline in incidence as seen in many countries. The proportion of young stroke is significantly higher, underlying heart diseases especially rheumatic and post -partum venous sinus thrombosis being important cause.[3]

1. Dr. aruna tubachi. Has carried out a research on "Factors associated with stroke and its outcome among patients attending tertiary care hospital in bangalore "Mean age of persons with stroke was 61.08+1.32. 27(45%) of cases had diabetes. 38 (63.3%) of cases had hypertension. Hypertension and family history were highly statistically significant (p=<0.001). 19(31.7%) of cases were smokers. 16(26.7%) of cases and 17(14.2%) of controls had history of alcohol intake. Mean MRS score at 28 days was 23.95 at the time of admission and 17.95 at the 28 days time. This was statistically not significant (p=0.118)[1.]

3. OBJECTIVE
To study the prevalence of possible risk factors, treatment, cure among stroke patients by creating awareness in HTN, DM, AND Dyslipidemia patients.

3.1 SPECIFIC OBJECTIVES
The study chiefly concentrates on following primary objectives:
- To compare possible risk of stroke in HTN, DM, Dyslipidemic patients in community.
- Assessing the treatment in stroke patients and noting the recovery after treatment.
- To ensure rational use, effectiveness, and safety of drugs.

➤ Role of clinical pharmacist in creating awareness on stroke.

4. METHODOLOGY

4.1 Study site

Sri Venkata Sai (S.V.S) Tertiary care teaching hospital in Mahabubnagar, Andhra Pradesh-509001

4.2 Study period

The study was carried out for a period of 6 months, 2014.

4.3Study Approval

The study protocol and written informed consent form were approved by the ethical committee at the hospital.

4.4 Study criteria

4.1.1 Inclusion criteria

➤ Stroke patients,

➤ adults >20yrs of both sex,

➤ D.M, H.T.N, and obese patients.

4.1.2 Exclusion criteria

➤ Pregnant and lactating women,

➤ pediatrics,

➤ psychiatric patients,

➤ Bed ridden patients,

➤ Patients who reject participating.

4.5 Source of Data and Materials

➤ Patient consent form,

➤ NIHSS scale,

➤ Patient data collection form.

4.6 Material used

4.6.1 Informed Consent Form

Informed consent was obtained from all the patients before conducting the study.

4.6.2 Patient Data Collection Form

A well designed patient data collection form was developed and used for this study.

Patient demographic details-

I.P.no

Patient name

Age

Gender

Chief complaints

Lab investigation reports

Diagnosis

Drug profile/ Treatment plan.

4.7 Testing tools

4.7.1 NIHSS detailed form

A detailed data ranking form of 11 questionaries' was used for noting the stage and severity of collected cases, and was ranked according to the NIHSS mentioned stroke strategy.

Patient demographic details

Known risk factor prior to stroke

Laboratory findings-

Blood pressure data

Imaging

Treatment

NIHSS scale

Discharge and follow-up details

Patient counseling

4.7.2 Source of Data

Patient data relevant to the study was obtained from the following sources.

4.7.3 Inpatients: Patient case records, medication charts and lab reports.

4.8 STUDY PROCEDURE

This is a prospective, observational, and interventional study being focussed on stoke patients. Using standard NIHSS scale a prospective study is being carried out to determine the risk factors in both in-patients and out-patients and using counselling sessions and

community services they were interviewed by telephone then visited for noting the therapeutic outcome.

4.8.1 Statistical analysis

Statistical analysis was carried out using the IBM SPSS statistics version 20 (NIHSS, mRS), data were checked for tabular and graphical derivations, and p-value, Microsoft office excel was used for graphs derivation.

5. RESULTS AND DISCUSSION

A total of 97 cases of stroke were collected of which 66were males and 31 females (fig.2). About 50 males and 22 females of above 50yrs and above age were affected more (74.2%) than other categories (table 1).

Of these cases only 50.51% of patients were found to be literate with males (41cases) outranking females (8cases) (table2).

A total of 27 patients were reported as smokers (table3) of which 16 had an ischemic attack followed by subarachnoid and TIA (4cases) and hemorrhagic (3cases). Only 7 tobacco chewers (table4) were reported of which 5 an attack of ischemic stroke had followed by 2 TIA (table3).

In (table5) 44 patients were reported as alcoholic of which 27 ischemic, 8TIA, 7subarchoid and 4 hemorrhagic attack.

A total of 11 DM cases (table6) with 6 ischemic, 3TIA and 2 hemorrhagic cases were found.

In (table7) 40 HTN cases with 23ischemic followed by 9 hemorrhagic, 5subarachnoid, 3TIA.

In (table8) 64 hyperlipidemia condition with 42 ischemic, 10TIA, 8 subarachnoid, 4 hemorrhagic were noted. In males highest frequency of ischemic (37cases) stroke was followed by TIA (11cases) subarachnoid and hemorrhagic each 9 cases were noted. Were as in females 21 ischemic, 4 subarachnoid and 3ach of TIA and hemorrhagic were found.

According to(table10) NIHSS severity of score 3% (3cases)falls into >20 severe category with 3males followed by 21.6%(21cases) are moderate to severe(16-20) with 12males and 9 females, about 57.7%(56cases) were moderate(5-15) scoring with 40males and15 females, followed by 17.5%(17 cases) of <5minor stoke with 11males and 6females were found. A

total of ischemic (59cases)stroke was reported high followed by TIA (14cases)followed by hemorrhagic equals subarachnoid(12cases) with a high frequency of moderate (5-15)stroke(56cases) followed by moderate to severe(16-20) stroke (21cases), followed by minor(<5) stroke(17cases) and severe(>20) stroke(3cases).

The treatment (table12) contains usage of anti-HTN (23cases), as well as anti- platelet (12cases) drugs for HTN patients, in DM patients both anti-DM (4cases) and dyslipidemias (3cases) were given and in patients with both HTN, DM anti platelets (6cases) and dyslipidemias (5cases) were given.

After 24hrs after treatment (fig3) the severity of stroke was significantly reduced, severe (<20) score was reduced to 0 , moderate to severe(16-20) scored condition was reduced to 2%, moderate(5-15) condition was reduced to 62.8%,and minor(<5) score was reduced to 35.96%, and no symptoms condition was acquired by 3% of patients.

After discharge (fig4) both severe (>20) score and moderate to severe (16-20) scored patient's condition was trailed to 0, and moderate score (5-15) was found in 8.24%, followed by minor (<5) scored patients were about 64.97% and about 26.08% of patients were with no symptoms.It can be seen that in the collected 97 cases the males outnumbers females and literacy rate is comparatively less thus, the awareness on stroke is poor. And about 50yrs and more age group of patients are prone more to stroke than other age group categories. Ischemic stroke is more followed by TIA and both hemorrhagic equals subarachnoid. According to NIHSS moderate score (5-15) is reported more followed by moderate to severe score (16-20) followed by minor score (<5) and severe scored (>20). Smokers, tobacco chewers and alcoholics are more affected by ischemic stroke followed by TIA, subarachnoid and hemorrhagic forms of stroke. In DM patient's ischemic stroke was more followed by TIA and hemorrhagic. Were as, in HTN patients ischemic attack was followed by hemorrhagic, subarachnoid and TIA. In dyslipidemic patients ischemic stroke was followed by TIA, subarachnoid and hemorrhagic stroke. According to Mohammad Wasay et.al.[9] in India the number of stroke reporting's are increasing due to lack of proper awareness causing economic burden .After stroke treatment the results was compared and assessed using NIHSS after 24hrs and at discharge which depicted a significant improvement in patients condition with the proper treatment, diet and a contributing hand of clinical pharmacist by counseling the patient and their care takers on proper usage of medications, awareness on recurrent attack.

Table.1: Distribution of stroke patients based on age and gender

Age groups	No of patients	Gender		(%)
		Male	female	
20-29	1	0	1	1.03
30-39	10	7	3	10.30
40-49	14	9	5	14.43
50&above	72	50	22	74.22

Table.2: Distribution of Educational Status based on Gender

Educational class	No of patients	Gender		%
		Male	Female	
Illiterate	48	25	23	49.49
Literate	49	41	8	50.51
Total	97	66	31	100

Table.3: Comparison of types of stroke in smokers

Count of TYPE OF STROKE	SMOKER		
TYPE OF STROKE	No	Yes	Grand Total
Haemorrhagic	9	3	12
Ischaemic	42	16	58
Subarachnoid	9	4	13
TIA	10	4	14
Grand Total	70	27	97

Table.4: Comparison of types of stroke in Tobacco chewer

COUNT OF TYPE OF STROKE	TOBACO CHEWER		
TYPE OF STROKE	No	Yes	Grand Total
Haemorrhagic	12	0	12
Ischaemic	53	5	58
Subarachnoid	13	0	13
TIA	12	2	14
Grand Total	90	7	97

Table.5: Comparison of types of stroke in Alcoholic

Count of ALCOHOLIC	ALCOHOLIC		
TYPE OF STROKE	No	Yes	Grand Total
Haemorrhagic	8	4	12
Ischaemic	33	25	58
Subarachnoid	6	7	13
TIA	6	8	14
Grand Total	53	44	97

Table.6: Comparison of types of stroke in DM

Count of TYPE OF STROKE	DM		
TYPE OF STROKE	No	Yes	Grand Total
Haemorrhagic	10	2	12
Ischaemic	52	6	58
Subarachnoid	13	0	13
TIA	11	3	14
Grand Total	86	11	97

Table7. Comparison of types of stroke in HTN

Count of TYPE OF STROKE	HTN		
TYPE OF STROKE	No	Yes	Grand Total
Haemorrhagic	3	9	12
Ischaemic	35	23	58
Subarachnoid	8	5	13
TIA	11	3	14
Grand Total	57	40	97

Table 8. Comparison of types of stroke in Dyslipidemia

Count of TYPE OF STROKE	HYPERLIPIDEMIA		
TYPE OF STROKE	No	Yes	Grand Total
Haemorrhagic	8	4	12
Ischaemic	16	42	58
Subarachnoid	5	8	13
TIA	4	10	14
Grand Total	33	64	97

Table9. Comparison of type of stroke associated in patients based on gender

Stroke type	No of patients	Gender	
		Male	Female
Ischemic stroke	58	37	21
Haemorrhagic	12	9	3
Subarachnoid	13	9	4
TIA(transient ischemic stroke)	14	11	3
Total	97	66	31

Table10. Severity of Stroke according to NIHSS scale based on gender

NIHSS score	No of patients	Gender		%
		Male	Female	
>20(severe)	3	3	0	3.02
16-20(moderate to severe)	21	12	9	21.64
5-15(moderate)	56	40	16	57.73
<5(minor)	17	11	6	17.52
Total	97	66	31	100

Table11. Severity of Stroke Types according to NIHSS scale

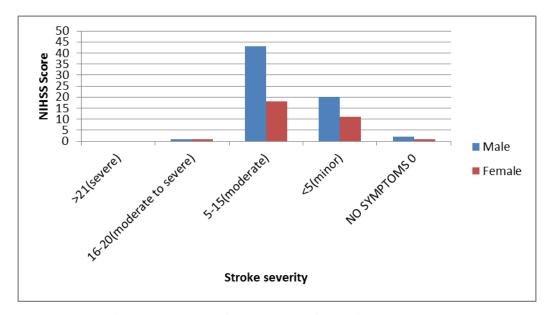| NIHSS score	ischemic		Haemorrhagic		subarachnoid		TIA		Total
	Male	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**	
>20(severe)	1	0	1	0	1	0	0	0	3
16-20(moderate to severe)	8	8	1	0	1	1	2	0	21
5-15(moderate)	23	9	6	3	5	2	6	2	56
<5(minor)	6	4	1	0	1	1	3	1	17
Total	38	21	9	3	8	4	11	3	97

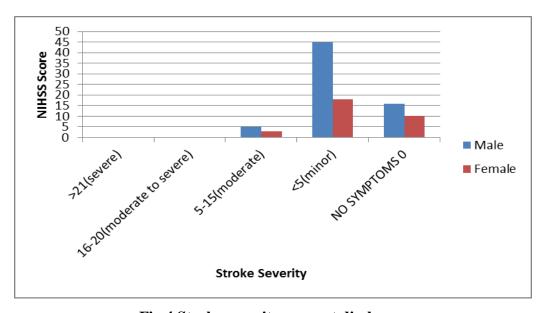**Fig.3 stroke severity score at 24hrs after treatment**

Fig.4 Stroke severity score at discharge

In dyslipidemic patients ischemic stroke was followed by TIA, subarachnoid and hemorrhagic stroke. According to Mohammad Wasay et.al.[9] in India the number of stroke

reporting's are increasing due to lack of proper awareness causing economic burden. And a possibly high risk of stroke was found in males when compared to females as per the statistics which we have acquired. Based on severity ranking according to NIHSS moderate to severe(16-20) as well as moderate(5-15) cases were found high during admission which were reduced to minor(<5) after treatment with anti –HTN, anti-DM, anti- platelets and dyslipidemic agents. The study concludes that the proper awareness on stroke reoccurrence and a detailed knowledge on stroke can decrease the incidence of recurrent attack. The given study can be further extended for analysis for derivation of more data of patient's rehabilitation, medication adherence.

It can be used for epidemiological survey studies.It can be used for analysis of stroke prevalence, treatment as well as its economic burden in India. Through our study we tried to impart clinical pharmacist role in management of stroke. The contributing hand of all health care professionals can be a proven help in preventing stroke. With the help of physicians, and other medical professionals the therapeutic benefit of stroke survivors can further be improved.

8. CONCLUSION

The study was conducted on 97 selected stroke patient whose cases were selected as per the required criteria of the study design for about 6months of study duration. The standard NIHSS scale was used to rank the severity of stroke as per the questionaries' answered by patients and their care takers from which about   cases were identified and ranked as severe, about cases as moderate, around cases as acute stroke. The study concludes that the proper awareness on stroke reoccurrence and a detailed knowledge on stroke can decrease the incidence of recurrent attack. Through our study we tried to impart clinical pharmacist role in management of stroke. The contributing hand of all health care professionals can be a proven help in preventing stroke. With the help of physicians, and other medical professionals the therapeutic benefit of stroke survivors can further be improved. An updated treatment strategies are to be imparted from journal publications, conferences by health care professionals. As our study was composed of limited duration ,further continuation of study for extended duration and along with the updated knowledge and health professionals contribution stroke incidence, burden on economy, and quality of life of patients can be improved to considerably to an extent.

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