



## A Study to Assess Prevalence and Major Risk Factors for Stroke in Acute Neuro Care Unit

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### Abstract

**Background:** A stroke is a severe medical disorder that happens when a portion of the brain's blood supply is cut off. Like all organs the brain requires to function properly with the oxygen and nutrient supplied by the blood. If blood flow is interrupted, brain cells start to die which results in brain damage and eventually causes death.

Two major causes of strokes are:

- **Ischemic (over 80 percent in all cases):** Blood flow ceases leading to blood clotting
- **Hemorrhagic:** A weakened blood vessel that supplies brain bursts and damages the brain
- **Transient Ischaemic attack (TIA)** is also a related condition in which blood supply to the brain is temporarily interrupted causing a 'mini stroke'. TIAs should be carefully handled as they are always a alert sign that a stroke is approaching.

**Objective:** To investigate the stroke epidemiology, its prevalence and risk factors in order to increase people's awareness of this problem. It also provides therapeutic management to improve patient quality of life.

**Methodology:** It is an observational study carried out to evaluate the prevalence and major risk factors of stroke, for a study period of 6 months using valid and reliable data collection forms at Neurology department of Medicover Hospital, Hyderabad, India.

**Results:** Of the total 150 stroke patient's cases observed majority of the cases were males (54.6%) compared to females (45.4%). Most cases were between 41-60 age group, 59 (39.4 percent) cases. Ischemic stroke (39.40 percent) was the most common cause of hospitalization

followed by haemorrhagic stroke (29.3 percent). Hypertension (94.6 percent) is the most common cause of stroke associated with diabetes and other disease conditions. The most common risk factor is Alcohol intake (82.6 percent). The most common form of drug used during treatment is Cognistar (98.6 percent) based on medical management. Compared with other types of CT-scan diagnosis (93.3 percent) the most frequently used during the process.

**Conclusion:** The risk factors for strokes are split into non-modifiable and modifiable ones. Transient ischaemic attack and family history are important non modifiable factors that cannot be regulated. Additionally, uncontrolled hypertension accompanied by uncontrolled diabetes are the most prevalent modifiable risk factors. In addition, physical inactivity, cigarette smoking, excessive alcohol consumption and obesity are known to be risk factors that can alter the stroke. By controlling or avoiding those modifiable risk factors, the alarming stroke can be reduced or even prevented.

**Keywords:** *Hypertension, Diabetes mellitus, Ischemic stroke, Hemorrhagic stroke, Transient ischemic attack*

## Introduction

Stroke is a term used to describe an abrupt-onset focal neurologic deficit that lasts at least 24hrs and is of presumed vascular origin [Dipiro J.T, *et al* 2008]. A stroke's effects depend upon which a part of the brain is injured, and the way seriously it's injured. Strokes may cause sudden fatigue, loss of feeling, or difficulty speaking, hearing, or walking, because various parts of the brain control different areas and functions, this can be usually the region that's affected immediately after the stroke.

Two types of disturbances can cause stroke:

### Ischemic stroke

It occurs when blood vessels of the brain are narrowed or blocked, causing the blood flow (ischemia) to be significantly reduced. Blocked or narrowed blood vessels are caused by fatty deposits piling up in blood vessels or by blood clots or other debris passing through your bloodstream and settling in your brain's blood vessels.

### Pathophysiology of Ischemic Stroke

Ischemic stroke is caused by a transient or permanent reduction in blood flow, restricted by embolic or thrombotic occlusion to the territory of a cerebral artery. Ischemic stroke causes brain cells to die and to dysfunction. Not all brain cells die promptly after an ischemic stroke. A necrotic pathway characterized by ischemic or edematous changes in cells, an apoptotic

pathway with several morphological, biochemical, pharmacological and molecular characteristics, or autophagocytosis occurs in cell death [Endreas M, *et al* 2008].

### **Hemorrhagic stroke**

It stroke occurs when a vessel bursts or ruptures within the brain experiencing hypoxia and lack of glucose. Brain hemorrhages may be caused by several factors affecting the blood vessels [Mayo Clinic 2020].

### **Pathophysiology of Hemorrhagic Stroke**

Intracerebral hemorrhages (ICH) account for 10-15% of all strokes. It is a particularly severe stroke subtype associated with 30-50% mortality [Qureshi A.I, *et al* 2008]. Intracerebral hemorrhages are heavily linked to cerebral microvascular diseases. The most common underlying disorder is hypertensive microangiopathy that manifests predominantly in deep cerebral structures (basal ganglia, brainstem, and cerebellum). Cerebral amyloid angiopathy in elderly people develops in cortical arteriolar and venular microvessels.

### **Transient Ischemic Attack**

Ischemic strokes are often accompanied by transient ischemic attacks (TIAs), also referred to as mini-strokes or temporary strokes. This occurs when part of the brain experiences temporary blood supply shortages. It causes symptoms of a stroke that heal within 24 hours. Ministroke symptoms and symptoms of a stroke are nearly similar. Around 1 in 3 people who later experience a mini stroke, so early care is necessary. [Mayo Clinic 2020].

### **Risk Factors**

The older you get, the greater the danger of getting a stroke, however, a big number of young and middle-aged people even have strokes.

Men also are more likely to possess a stroke than women. People who have had a previous stroke or TIA also are more likely to possess another one, as are people with a case history of stroke or other types of disorder (such as angina or heart attack). [Feigin VL, *et al* 2010]

### **Risk factors for ischemic stroke include:**

- High blood pressure;
- A type of irregular heartbeat known as atrial fibrillation (AF);
- Cigarette smoking;
- Excessive alcohol intake;
- Being overweight or obese;
- Diabetes;
- High cholesterol; and
- Poor diet and inadequate physical activity.

**Risk factors for hemorrhagic stroke include:**

- High blood pressure;
- Smoking;
- Taking anticoagulant medicines;
- Having a bleeding disorder (such as thrombocytopenia or haemophilia); and
- A previous brain/head injury

**Non-modifiable risk factors or risk markers**

- Age
- Gender
- Race
- Family History of stroke
- Low birth weight

**Modifiable, well-documented**

- Hypertension—single most important risk factor for ischemic stroke
- Atrial fibrillation—most important and treatable cardiac cause of stroke
- Diabetes—independent risk factor
- Dyslipidemia
- Cigarette smoking
- Alcohol consumption
- Sickle cell disease
- Asymptomatic carotid stenosis
- Postmenopausal hormone therapy
- Lifestyle factors—associated with stroke risk
- Obesity
- Physical inactivity
- Diet

**Potentially modifiable, less-well documented**

- Oral contraceptives
- Migraine
- Drug and alcohol abuse
- Hemostatic and inflammatory factors—fibrinogen linked to increased risk
- Homocysteine
- Sleep disordered breathing.

## Clinical Presentation

- **Paralysis or loss of muscle movement:** On one side of your body, you may become paralyzed, or you may lose control of certain muscles, like those on one side of your face or arm.
- **Difficulty talking or swallowing:** A stroke may affect muscle control in your mouth and throat, making it hard for you to speak, swallow or eat clearly. You may also have language difficulties including speech, reading, or writing, speaking or understanding.
- **Memory loss or thinking difficulties:** Many people who have had strokes experience a certain loss of memory. Others may have difficulty thinking, reasoning, judgment making and concepts of understanding.
- **Emotional problems:** People who have had strokes may find it harder to control their emotions, or they may develop depression.
- **Pain:** In the parts of the body affected by the stroke, pain, numbness or other unusual sensations may develop. For instance, if a stroke causes you to lose feeling in your left arm, there may develop an uncomfortable tingling sensation in that arm.
- **Changes in behavior and self-care ability:** People who have suffered strokes may get more withdrawn. They might need help with toiletries and daily chores [Mayo Clinic 2020].

## Signs and Symptoms

Symptoms	Area effected
Numbness of face, arms and legs	Primary Somatosensory cortex responsible for sense of touch.
Weakness of face, arms and legs	Motor cortex.
Motor/sensory symptoms of the lower limbs	Anterior cerebral artery
Symptoms of face and upper limb	Middle Cerebral Artery
Symptom of cross neuron functions i.e. left or the right sided body functions	Spinal cord, Brainstem, Brain
Problems in fluid speech production	Broca area of Frontal lobe
Problems in understanding and producing meaningful speech	Wernicke's area at the junction of Temporal and parietal lobe
Loss of vision	Posterior cerebral artery of Occipital lobe
Damage to the right side of vision of both the eyes and vice versa	Left or right side of occipital lobe
Sudden dizziness or loss of balance or coordination is due to stroke	Cerebellum
Sudden severe headache of unknown cause	Hemorrhagic stroke, Usually associated with breakage/rupture of blood vessel. <sup>[1]</sup>

## Laboratory Tests

- Tests should only be carried out for hypercoagulable states (protein C deficiency, antiphospholipid antibody) when the cause of the stroke cannot be determined based on the presence of well-known risk factors for stroke.
- Protein C, protein S, and anti-thrombin III are best measured in the "stable state" and not at the acute stage.
- Antiphospholipid antibodies as measured by anti-cardiolipin antibodies,  $\beta$ 2-glycoprotein I, and lupus anticoagulant screen are of greater yield than protein C, protein S, and anti-thrombin III, but should be reserved for patients young (< 50 years of age), having multiple venous / arterial thrombotic events, or having livedo reticularis (a skin rash) [Dipiro, *et al* 2008].

## Other Diagnostic Test

- Computed Tomography Scan (CT)
- Magnetic Resonance Imaging Scan (MRI)
- Carotid Doppler Test (CD)
- Electrocardiogram (ECG)
- Transthoracic Echocardiography (TTE)
- Transesophageal Echocardiography (TEE)
- Transcranial Doppler (TCD)

## Treatment

The goals of treatment of acute stroke are:

1. To reduce the ongoing neurologic injury, decrease mortality and long-term disability.
2. Prevent complications secondary to immobility and neurologic dysfunction;
3. Prevent stroke recurrence.

## Golden Hour of Stroke

- Stroke patients who reach the hospital within an hour of symptoms receive a clot-busting medication- tissue plasminogen activator (t-PA) twice as frequently as those who arrive later. Researchers call the first hour of the onset of symptoms "the golden hour." The study reinforces the importance of reacting quickly to symptoms of a stroke because "time lost is brain lost."
- Larger work has shown that less than 29 percent of AIS patients actually arrive in the emergency room (ER) within 60 minutes of the onset and only 18 percent of these patients have a DTN(Door-to-Needle) time of 60 minutes or less. Because of the stresses of the ER

the benefits of getting to the hospital quickly are often nullified, so very few patients are actually treated within 60 min of the onset of symptoms. It is quite remarkable that within the Golden Hour our center is consistently treating every eighth patient (18.2 percent, 14.8 percent, 12.5 percent and 14.5 percent) [Advani R, *et al* 2017].

- The first step in treating a patient with a suspected acute stroke is to ensure that the patient's respiratory and cardiac systems are supported, as well as to immediately evaluate whether the lesion is ischemic or hemorrhagic using a CT scan.
- Patients who present with symptoms of ischemic stroke within hours of the beginning of symptoms should be evaluated for reperfusion therapy.
- TIAs also triggered prompt medical attention to reduce the risk of stroke, which is thought to be highest in the days following the TIA.
- Unless their blood pressure is over 220/120 mm Hg, or they have evidence of Aortic Dissection, Acute Myocardial Infarction (AMI), Pulmonary Edema, or Hypertensive Encephalopathy, patients with high blood pressure should not be treated.
- Short-Acting Parenteral Agents, such as Labetalol, Nicardipine (0.5mg/kg), and Nitroprusside (0.3mcg/kg.min), are preferred when blood pressure is treated.
- After the patient has passed through the Hyperacute stage, the attention switches to preventing, worsening, and limiting sequelae, as well as implementing secondary prevention strategies. [Dipiro, *et al* 2008].

### Ischemic Stroke

The **Stroke Council of the American Stroke Association** has created and published guidelines that address the management of acute ischemic stroke.

In general, only two pharmacologic agents are recommended with grade A recommendations i.e., **intravenous t-PA** within 3 hours of onset and **aspirin** within 48 hours of onset.

The essentials of the treatment protocol can be summarized as:

1. Stroke team activation.
2. Onset of symptoms within 3 hours.
3. CT scan to rule out hemorrhage.

Administer **t-PA 0.9 mg/kg** over 1 hour, with 10% given as initial bolus over 1 minute.

- Avoid antithrombotic (anticoagulant or antiplatelet) therapy for undifferentiated cases.
- Monitor the patient closely for response and hemorrhage.

- Early aspirin therapy has also been shown to reduce long-term death and disability but should never be administered within 24 hours of t-PA, as it may increase the risk of bleeding in such patients [Dipiro, *et al* 2008].

#### **t-PA (Tissue Plasminogen Activators)**

- It is a protein involved in the breakdown of clots. It is a serine protease found on endothelial cells, the cells that line the blood vessels.
- It catalyses the conversion of Plasminogen to plasmin, the major enzyme responsible for clot breakdown [Dipiro, *et al* 2008].
- e treatment of ischemic stroke was demonstrated in the National Institutes of Neurologic Disorders and Stroke (NINDS) [Dipiro, *et al* 2008].

#### **Antiplatelet Agents**

- All patients who have had an acute ischemic stroke or TIA should receive long-term antithrombotic therapy for secondary prevention.

#### **Anticoagulants Agents**

- Warfarin: - Initial dose-2.5mg PO / IV for 2days. Typical maintenances dose ranges between 2 and 10mg/day.
- Warfarin depletes functional Vitamin K reserves, which in turn reduces synthesis of active clotting factors [Dipiro, *et al* 2008].

#### **Blood pressure lowering agents**

- Elevated blood pressure is very common in ischemic stroke patients, and treatment of hypertension in these patients is associated with a decreased risk of stroke recurrence.
- Based on the results of this study and other evidence of the tolerability and vascular protective properties of the ACE inhibitors, the Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC7) and the AHA/ASA guidelines recommend an **ACE inhibitor** and a **Diuretic** for the reduction of blood pressure in patients with stroke or TIA.
  - **Benzapril / hydrochlorthiazide:** - 5mg/6.25mg. Not for initial therapy
  - **Captopril / hydrochlorthiazide:** - initial 25mg /15mg PO Qday, not to exceed 150mg/50mg.
  - It is appropriate to start this therapy, after the patient has failed to achieve desired effect with monotherapy
  - **Quinapril / hydrochlorthiazide:** -10mg/12.5mg.



## Lipid Lowering Agents

- HMG-Co-A reductase inhibitors inhibit the rate limiting step in cholesterol biosynthesis by competitively inhibiting HMG-CoA reductase.

## Hemorrhagic Stroke

Treatment of a hemorrhagic stroke depends on the cause of the bleeding (e.g., high blood pressure, anticoagulant use, head trauma, malformation of the blood vessels). Most patients are closely monitored during and after the hemorrhagic stroke in an intensive care unit.

Some of the treatments are explained below:

- **Surgical treatment:** It may be recommended that a surgical procedure prevent or stop bleeding or reduce the pressure inside the skull. Depending on the severity of the stroke and the condition of the patient, surgery may be performed within the first 48 to 72 hours after the hemorrhage, or it may be delayed until one to two weeks later in order to allow the patient to stabilize.
- **Aneurysm treatment:** An aneurysm is a vessel in the blood that has a weak area that balls out. If the area breaks and bleeds, then there may be a hemorrhagic stroke. To prevent bleeding before a stroke or to prevent re-bleeding, a clamp may be placed at the base of the aneurysm. This surgery requires a piece of the skull to be removed and the aneurysm located within the brain tissue. This procedure is performed after general anesthesia is given to the patient, and often takes several hours to complete. At the end of the surgery the piece of the skull is replaced [Caplan LR, *et al* 2019].

## Rehabilitation

After a stroke, a successful recovery will often involve specific changes in the therapies and support of medical management, such as:

- **Speech therapy:** This usually helps to face any problems in understanding the speech or producing it. Practicing daily, relaxation, and changes in the communication style can also help during management of stroke.
- **Physical therapy:** This will assist a person in relearning movement and coordination. It's critical to stay active, even if it's challenging at first.
- **Occupational therapy:** This is frequently used to aid an individual's capacity to carry out daily activities such as bathing, cooking, dressing, eating, reading, and writing.
- **Support groups:** These helps in the treatment of common mental health issues such as post-stroke depression. Sharing common experiences and exchanging information is also beneficial to many people.

- **Support from friends and family:** Following a stroke, those closest to a person should provide practical assistance and comfort. It is crucial to educate friends and family about the activities you do to support [Eleainek L, *et al* 2018].

### **Aims & Objective**

- To determine the prevalence of stroke in acute neuro care unit.
- To identify various risk factors associated with stroke.
- To provide awareness of stroke and its modifiable risk factor in patients by providing patient counselling and leaflets to the patients so as to minimize the risk and recurrence of stroke.

### **Materials and Methods**

#### **Study Design**

- The study is prospective, observational study.

#### **Source of Data and Materials**

- Patient Consent Form.
- Patient Data Collection Form.
- Patient case note / prescription.
- Patient Educational Leaflet.

#### **Inclusion Criteria**

- To identify the prevalence and various risk factor associated with stroke

#### **Exclusion Criteria**

- Patients who are not willing to give consent

#### **Method of Data Collection**

- Case Sheet.

#### **Study Procedure**

This is a prospective observational study where patients eligible is enrolled in the study after obtaining the consent. A data collection form is used. This form mainly contains the demographic details of the patient and medication chart. Along with this, a leaflet is prepared & used to educate the patient regarding the risk factors of this disease. The study has been conducted at MEDICOVER hospital, Hyderabad, India. All information relevant to the study will be collected at the time of admission until the date of discharge and the data will be analysed using a suitable method for statistical analysis.

## Result

**Table 1: The prevalence of stroke according to gender**

Gender	No. of Patients
Male	82 (54.6%)
Female	68 (45.3%)

**Table 2: Month wise distribution of cases**

Months	No. of patients
August	16 (10.6%)
September	17 (11.4%)
October	16 (10.6%)
November	24 (16%)
December	27 (18%)
January	25 (16.6%)
February	15 (10%)
March	10 (6.7%)

**Table 3: Age group wise distribution of cases**

Age group	No. of patients
<40	24 (16%)
40-60	59 (39.4%)
61-80	38 (25.3%)
81-100	21 (14%)
>100	8 (5.3%)

**Table 4: Distribution of cases based on body mass index**

Body mass index	No. of Patients
<b>Male</b>	<b>82 (54.6%)</b>
Normal	29 (19.3%)
Over weight	38 (25.3%)
Under weight	15 (10%)
<b>Female</b>	<b>68 (45.3%)</b>
Normal	20 (13.3%)
Over weight	29 (19.3%)
Under weight	19 (12.6%)

**Table 5: Types of stroke**

Types of stroke	No. of patients
Ischemic stroke	59 (39.4%)
Hemorrhagic	44 (29.3%)
Tia	47 (31.3%)

**Table 6: Disease condition in stroke**

<b>Disease condition</b>	<b>No. of patients</b>
Hypertension	142 (94.6%)
Diabetes mellitus	134 (89.3%)
Cardiac disorder	82 (54.6%)
Coronary artery disease	73 (48.6%)
Hypothyroidism	67 (44.6%)

**Table 7: Comorbid conditions of patient in stroke**

<b>Disease condition</b>	<b>No. of patients</b>
DM + HTN	112 (74.6%)
HTN+ CAD	98 (65.3%)
HTN+CAD+DM	76 (50.6%)
HTN+CARDIAC DISORDER	103 (68.6%)
HTN+ HYPOTYROIDISM	64 (42.6%)

**Table 8: Combined risk factor in stroke**

<b>Risk factor</b>	<b>No. of patients</b>
Smoker + alcoholic	87 (58%)
Smoker + tobacco chewer	98 (65.3%)
Tobacco chewer + alcoholic	66 (44%)
Over weight + smoker	67 (44.6%)
Over weight + alcoholic	48 (32%)

**Table 9: Distribution of cases based on risk factor**

<b>Risk factor</b>	<b>No. of patients</b>
Smoker	98 (65.3%)
Alcoholic	124 (82.6%)
Tobacco chewer	118 (78.6%)
RTA	27 (18%)
Head injury	69 (46%)

**Table 10: Types of diagnosis in stroke patients**

<b>Diagnosis</b>	<b>No. of patients</b>
Mri	120 (80%)
Ct scan	140 (93.3%)
Carotid doppler	96 (64%)
Ecg	87 (58%)
2d-echo	69 (46%)
Abdomen and kub scan	53 (35.3%)

**Table 11: Treatment given to stroke patients**

<b>Drugs prescribed</b>	<b>No. of patients</b>
Inj. Magnex forte	102 (68%)
Inj. Nootropil	136 (90.6%)
Tab. Ecosprin	141 (94%)
Inj. Cognistar	148 (98.6%)
Inj. Pan	147 (98%)
Inj. Optineuron	144 (96%)
Inj. Clindamycin	127 (84.6%)
Inj. Levipil	118 (78.6%)
Inj. Zofer	112 (74.6%)
Tab. atorvas	101 (67.3%)

## Discussion

In this study we observed that majority of cases were of males 82 (54.6%) and 68 (45.4%) were of females. According to other studies of global burden of disease females are more prone to stroke. Most of the cases were noted between 41-60 (39.4%) years of age followed by 61-80 (25.3%) years of age. Least number of cases were found in 20-40 (16%) and 100-120 (5.3%) years of age.

Based on the body mass index (BMI) we observed that majority of over-weight cases were of males 38 (25.3%) and 29 (19.3%) were of females. According to the national stroke screening survey the finding is preponderance. According to the types of stroke majority of the patients has been diagnosed with ischemic stroke 59 (39.4%) when compared to the hemorrhagic stroke 44 (29.3%), Transient ischemic attack 47 (31.3%). According to the Indo –us-collaboration stroke project, the finding is consonance.

Disease pattern in this study were Hypertension (94.6%) Diabetes mellitus (89.3%) Hypothyroidism (44.6%), Coronary artery disease (48.6%), Head injury (46%) Road Traffic Accident (RTA) (18%), Cardiac disorder (54.6%). Excess cases of stroke is due to stress and lack of awareness to get early medical help.

In the studied population majority cases of risk factors were found in males from which Smoker (65.3%), alcoholic (78.6%), Tobacco chewer (82.6%). Least number of cases were found in female smoker (7.2%), Tobacco (4.9%), Alcoholic (8.4%). According to the advanced biomedical research men were far more likely to drink and smoke than women.

The most common type of diagnosis is CT-Scan 140 (93.3%) has been used during the process. The other types of diagnosis were used are MRI (80%), Carotid Doppler (64%), ECG (58%), 2D Echo (46%), Abdomen and KUB scan (35.3%).

In this study we observe that majority cases of hypertension were of males (53.3%) and (44.6%) were of females. According to the global burden of disease study the majority of hypertensive cases are found in male. The other disease diagnosed in patient was Diabetes Mellitus from which males were (47.7%) and females were of (52.3%). According to the US collaborative study, after hypertension the diabetes mellitus is the major risk factor for stroke and more diabetic cases were more found in female.

In our study we observe that many of the patients has been diagnosed with comorbids. condition such as DM + HTN (74.6%), HTN + CAD (65.3%), HTN + Cardiac disorder (68.6%). The most commonly prescribed drug was cognistar (98.6%). Cognistar contain Cerebroprotein hydrolysate. It belongs to the class of drugs known as nootropics. It works on the central nervous system and improves the metabolism of neuron and protects nerve from damage.

The most commonly used anti-emetic was Ondansetron (74.6%) as it is highly effective and possesses low side effect profile. In our study the most commonly used anti platelet was Ecosprin (94%). It is used to prevent clots in blood vessels and also relieves pain and inflammation.

Most common type of cognitive enhancer were prescribed was Nootropil (90.6%). It improves the flow of blood and oxygen to the brain which helps in the improvement of awareness and memory. The most common type of antibiotic was prescribed were Magnex Forte (68%). It is a combination drug of cefoperazon + sulbactum. It belongs to the class of third generation cephalosporin and it is used for the treatment of systemic infeactions.

## Conclusion

The research carried out was an observational study conducted to assess the prevalence and major risk factors of stroke. Hypertension (94.6%), Diabetes (89.3%), and cardiac disorder (54.6%) were the major disease conditions which causes stroke. People with comorbid conditions are more susceptible to stroke. The highest comorbid condition is seen in hypertension and diabetes mellitus patients (74.6%).

Ischemic stroke (39.4%) was the most common type of stroke noted. Followed by Haemorrhagic stroke (29.3%) and Transient ischemic attack (31.3%). Smoker (65.3%), Tobacco chewer (82.6%), Alcoholic (78.6%), overweight (57.3%) are the major risk factors of stroke and patients with multiple risk factors are more susceptible to develop stroke. Majority

of drugs prescribed were mainly Anti-platelets (94%), followed by Cognitive enhancer (90.6%), Antibiotics (68%), Antiemetic (74.6%), Anta-acid (98%).

Stroke can be prevented by achieving the high-risk or mass approach, or by combining these approaches. It can also be prevented by reducing hypertension and smoking cessation, and encouraging physical activity and following healthy diet. This study was needed to quantify the contribution and relative importance of various risk factors for stroke. It was found that hypertension was modifiable major risk factor for all types of strokes. Modifiable risk factors can be addressed by life style modifications and monitoring of disease through medications. Smoking cessation significantly reduces the risk of stroke and the intake of dietary components like fish and fruits are found to be beneficial in risk reduction.

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