

**STUDY OF RISK FACTORS OF STROKE IN PATIENTS VISITING NEUROLOGY OPD,
NIUM, BANGALORE WITH SPECIAL REFERENCE TO UNANI MEDICINE**S. Javed Ali^{1*}, Abdul Nasir Ansari² and Mohd Anwar³¹Clinical Registrar, Dept. of Moalejat, AKTC, AMU, Aligarh.²Reader, Dept. of Ilaj Bit Tadbeer, NIUM, Bangalore.³Professor, Dept. of Ilaj Bit Tadbeer, AKTC, AMU, Aligarh.***Corresponding Author: S. Javed Ali**

Clinical Registrar, Dept. of Moalejat, AKTC, AMU, Aligarh.

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ABSTRACT

Stroke is the one of the common neurological disease causing of morbidity and mortality worldwide. Stroke usually results of a number of predisposing conditions that originated years before the disease. Estimation of risks factors in population is not only assistive for health care providers but also important to key out persons at elevated risk and to select proper treatments in clinical studies. The aim of the present study was to identify the prevalence of common modifiable risk factors of stroke in patients of either gender, (age group 18 to 64 yrs) with history of stroke longer than 3 months, visiting Neurology OPD, National Institute of Unani Medicine (NIUM), Bangalore with special reference to Unani Medicine. , They main inference of study was that diabetes mellitus and smoking are the important risk factors of stroke. This study revalidated risk factors described by ancient Unani Medicine scholars.

KEYWORDS: This study revalidated risk factors described by ancient Unani Medicine scholars.**INTRODUCTION**

According to World Health Organization, Stroke is a syndrome characterized by the acute onset of a neurologic deficit that persists for at least 24 h, reflects focal involvement of the central nervous system, and is the result of a disturbance of the cerebral circulation.^[1]

Stroke is also one of the leading causes of mortality and morbidity worldwide^[2] the Global burden of Stroke estimates 400-800 strokes per 100,000 (Banerjee 2005) out of which 5.7 million deaths occurs, every year 16 million new acute strokes are diagnosed and according to WHO 2004, there are 28,500,000 DALYs (disability adjusted life-year) globally, 12.6 million people have moderate to severe disability following stroke and of this, 8.9 million are from low and middle income countries (Fisher 2011).^[3]

In India, the ICMR estimates of 2004 indicated that stroke contributed 41% of deaths and 72% of disability adjusted life years amongst the non-communicable diseases. The Indian National Commission on Macroeconomics and Health estimated that the number of strokes will increase from will be around 1,667,372 in 2015.

A study in 2009 had identified that 7% of medical and 45% of neurological admissions were due to stroke with

a fatality rate of 9% at hospital discharge and 20% at 28 days. More recently it has been estimated that 12% of all strokes occur in those less than 40 years: previous stroke is a major risk factor for stroke for those aged more than 65.^[3]

For India, the overall annual incidence (per 100,000 persons) of stroke is 124 in rural area (Bhattacharya 2005) and 145 in urban area (Das 2007). In 1997, it was estimated that 28.5 million DALYs were lost due to stroke worldwide; nearly 6 times higher than that of malaria (Dalal et al 2007). This is projected to increase to 61 million DALYs in 2020 and 84% of these DALYs lost will be in developing countries (Dalal et al 2007). In South East Asia alone, where India comprises 81% of the population, 6.36 million DALYs are estimated to be lost due to stroke (Gupta 2008). Recent evidence suggests that 72.7% of stroke survivors in rural India have severe disability and unmet needs for stroke care (Feri 2011).^[3]

Stroke is also a leading cause of functional impairments, with 20% of survivors requiring institutional care after 3 months and 15% - 30% being permanently disabled. (AHA 2009) According to the American Stroke Association (ASA), the individuals who survive after an acute attack of stroke, up to 90% of them reports one or more disabilities.^[2]

Risk Factors

Stroke usually results of a number of predisposing conditions that originated years before the catastrophe.⁽⁴⁾ Major preventable risk factors include hypertension, atrial fibrillation, diabetes, and tobacco consumption.⁽⁵⁾ Among the non modifiable risk factors the strongest determinant of stroke is age. Incidence rises exponentially with age,^(1,4,6) doubling for each decade after age 55. Men are more likely to have a stroke than women; the male/female sex ratio for India is 7:1.⁽⁷⁾

METHODS

The study was conducted on 28 eligible patients, in Neurology ward or came to Neurology OPD of National Institute of Unani Medicine hospital. Before starting the clinical trial, a comprehensive protocol was sketched and put forth for ethical clearance from the Institutional Ethical Committee of National Institute of Unani Medicine, Bangalore. After ethical clearance, clinical study was conducted by enrolling eligible patients according to inclusion criteria. This study spanned from February 2012 to January 2013.

Inclusion criteria

- Clinically diagnosed cases of Stroke.
- Patients aged between 18–64 years.
- Stroke having history at least of 3 months.
- Either gender.

Exclusion criteria

- Patients with terminal medical conditions such as Cancer.
- Unstable cardiac diseases.
- Uncontrolled hypertension.
- Renal insufficiency.
- Pregnant and lactating women.

All patients/relatives were explained about the criteria of study and after taking their consent, detail history was collected by the interviewer and physical examination was performed by the attending doctor.

Hypertension: Patients were believed to have hypertension if they either had hypertension and/or were treated for hypertension before stroke. Hypertension was diagnosed with systolic BP ≥ 140 mmHg and diastolic BP ≥ 90 mmHg (JNC-VII).⁽⁸⁾

Diabetes mellitus: Diabetes mellitus was considered to be present when subjects presented history of diabetes mellitus and/or were on diet/oral hypoglycemic drugs or received insulin treatment. WHO diagnostic criteria for diabetes; fasting plasma glucose ≥ 7.0 mmol/l (126mg/dl) or 2-h plasma glucose ≥ 11.1 mmol/l (200mg/dl).⁽⁹⁾

Smoking: ‘Current smoker’ is someone who has smoked greater than 100 cigarettes (including hand rolled cigarettes, cigars, cigarillos etc) in their lifetime and has smoked in the last 28 days. ‘Ex-smoker’ is someone who

has smoked greater than 100 cigarettes in their lifetime but has not smoked in the last 28 days. ‘Never smoker,’ a person who did not meet the criteria for a current smoker or ex smoker.⁽¹⁰⁾

RESULTS AND DISCUSSION

In the present study, the maximum number of patients i.e. 13 (46%) was observed in age group 41-50 years; while, 5 (18%) were in age groups 31-40; 7 (25%) patients were in age group of 51-60, and 3 (11%) in age group of 61-64. (Figure No. 1). However, age group with highest frequency of stroke did not correspond to data provided in previous studies. (Dalal, et al., 2008; Sridharan, et al. 2009)^(11,12) It is believed that the average age of patients with stroke in developing countries like India is 15 years younger than that in developed countries (Tripathi 2011 and Kumar 2011).⁽¹³⁾ This study suggested a male predominance (89 (Figure No.2) similar as observed by Sethi 2002, suggesting that in India Men are more likely to have a stroke than women with a ratio of 7:1.⁽¹⁴⁾ The reason behind this preponderance in male is thought to be the differences in risk factors such as smoking and drinking, which are more prevalent among men in India as compared with women.⁽¹⁵⁾ The highest number of patients i.e. 11 (39%) was observed in lower middle class (III) (Figure No.3). The association of stroke and its risk factors with low socioeconomic class was reported earlier by Tripathy et al.⁽¹³⁾ This study also revalidates observation of Prasad (2010), the findings of which discovered smoking, alcoholism, increased BMI, diabetes and hypertension significantly associated with strokes among young people⁽¹⁶⁾ as all patients in age group of 30-40 yrs were hypertensive and 66% patients had hypertension associated with smoking and alcoholism. (Figure 4).

Eapen (2009) considered Hypertension as a major risk factor of stroke with an association of 40%.¹³ This is proved by present study that 39 % of the subjects are associated with hypertension alone or with smoking, alcoholism and Diabetes Mellitus. (Figure 5) Other risk factors such as smoking, alcoholism and diabetes mellitus were found in 21%, 20% and 20% patients respectively (Figure No.7 &8). This data strengthens the evidence of hypertension, smoking, alcoholism and diabetes as being the major risk factors for stroke,⁽¹¹⁾ which is in confirmation with the findings of Feigin *et al.*⁽¹⁸⁾ Almani SA *et al.*⁽¹⁷⁾

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Above mentioned findings truly resemble the observations of Ancient Unani physicians Buqrat, Ibn Sina, Majoosi, and all eminent physicians emphasized

the relationship of age with *Falij (Stroke)*. They believed that Temperament in old age becomes cold and dry as stated by *Ibn Sina* “ وأما الكهول والمشايخ خصوصاً فهم أبرد فهم أبيض ”

“Old and much older are relatively more cold and dry”.^[21] People of cold temperament have higher propensity to develop *Falij*.^[19, 20]

This study also suggests Hypertension as one of the major risk factor of Stroke; findings are correlated with observation of Unani Physicians in which they mentioned *Imtila* (Correlated with Hypertension in this modern era) as of the major risk factor of Stroke. *Ibn Sina* stated “ الكهول فمن جاوز الخمسين فيصيبهم الفالج من نوازلهم ” و”يصيب عامتهم لسبب امتلاء الرؤوس”

“Middle aged individuals who cross fifty years of age are affected with paralysis due to *Nawazil*. Most of them are affected with *Imtila ur Raas*.²¹ This *Imtila ur Raas* may be correlated with Hypertension in this modern era.

In the same manner study also emphasis on consumption of alcohol & tobacco, ancient scholars believed that alcohol & tobacco in heavy quantity may lead to *Imtila*, which may ultimately lead to *Falij*. (*Stroke*); *Ibn Sina* stated “سبب الامتلاء شرب الشراب الكثير”

“One of the causes of *Imtila* is heavy alcohol consumption”^[21]

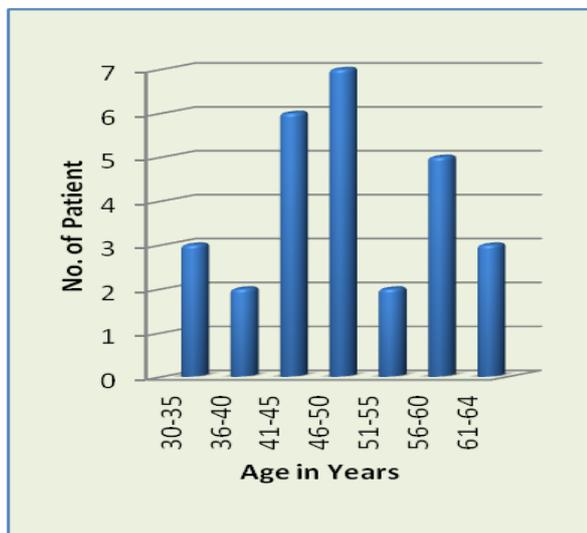


Figure 1: Distribution of the patients according to Age (N=28).

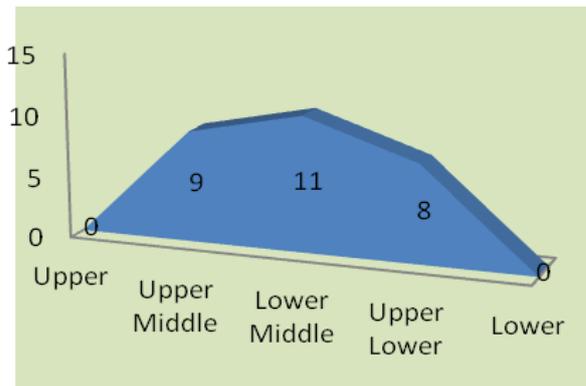


Figure 2: Distribution of the patients according to socio-economic status (N=28).

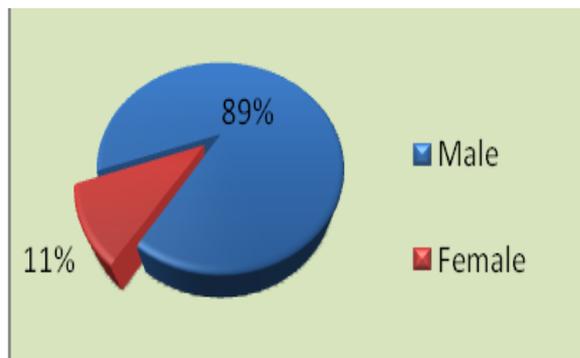


Figure 3: Distribution of the patients according to gender (N=28).

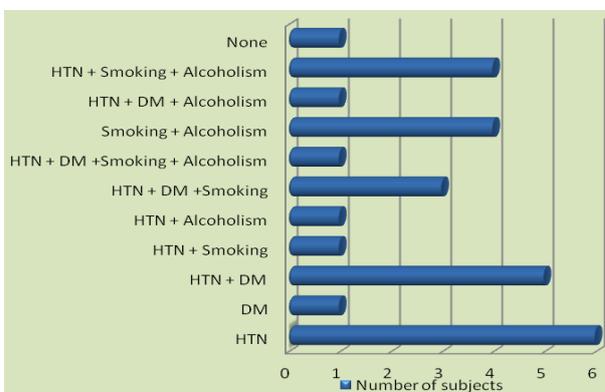
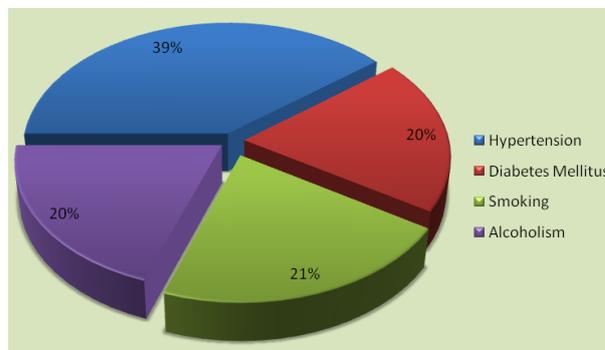


Figure 4 & 5: Distribution of patients according to associated Risk factors (N=28).

CONCLUSION

From the results of present study it may be concluded that hypertension, diabetes mellitus and smoking are the important risk factors of stroke, the findings are in correlation with findings of ancient unani medicine scholars, who believe old age, imtela and tobacco and alcohol addiction as cause of Falij.

This paper also opens vistas for further research on modifiable risk factors of stroke with special consideration of classic Unani Medicine texts.

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