



CODEN (USA): IAJPBB

ISSN: 2349-7750

**INDO AMERICAN JOURNAL OF  
PHARMACEUTICAL SCIENCES**<http://doi.org/10.5281/zenodo.817587>Available online at: <http://www.iajps.com>**Research Article****RETROSPECTIVE ANALYSIS OF INCIDENCE OF MIGRAINE IN  
PATIENTS OF ISCHAEMIC STROKE****Muhammad Iqbal<sup>1\*</sup>, Suhail Ahmed Almani<sup>2</sup>, Ramesh Kumar Suthar<sup>3</sup>,  
Aatir H. Rajput<sup>4</sup>, Muhammad Muneeb<sup>5</sup>, Syed Jehangir<sup>6</sup>, Maryam Iqbal<sup>7</sup>**<sup>1,2</sup> Department of Medicine, Liaquat University of Medical & Health Sciences, Jamshoro.<sup>5</sup> Indus Medical College, Tando Muhammad Khan.<sup>4,6</sup> Liaquat University of Medical & Health Sciences, Jamshoro.<sup>7</sup> Isra University, Hyderabad**Abstract:**

**Background:** Stroke and migraine are 2 commonly found disorders that are scarcely linked together. Migraine, a benign disease, lasts a lifetime and usually begins prior to the age of forty years and targets twelve percent of the people worldwide with a three to one female majority. On the contrary, stroke (an acute event) strikes every two out of a thousand victims per annum (aged an average of seventy years) with a two to one male majority. Despite the disparities, numerous researches have proposed a complex bidirectional link between stroke and migraine. A cerebral infarction may occur as a result of migraine, and a migraine makes one prone to suffer from an ischaemic stroke, especially young women. Furthermore, cerebral ischaemia can lead to a migraine.

**Objective:** Since stroke is more dangerous of the two, our research indulges in only one direction, i.e. exploring whether a migraine can increase the risk of a stroke by retrospectively studying the incidence of migraine in patients presenting with stroke at the study setting.

**Methodology:** The observational study was carried upon a total of 200 patients presenting with stroke at the medicine outpatient department of Liaquat University Hospital (Hyderabad and Jamshoro). Data was collected using a self-structured, closed ended, standard questionnaire that included necessary inquiries to establish whether the patient had suffered from migraines in the past. C.T scans were adopted as the tool to determine the legibility of stroke. The research lasted for a total of 18 months. Data was analyzed using SPSS v. 17.0 and Ms. Excel 365.

**Result:** The largest proportion of the sample fell within the age bracket of 25 – 63 years. 75 percent of the patients were male while 25 percent were females. The greatest proportion of women (58%) presenting with stroke fell within the age bracket of 35 to 45 years while the greatest proportion of men (42%) fell within the age bracket of 56 to 65 years. Among women ischaemic stroke was more common (60%) while haemorrhagic stroke was more common in men (75%). Migraines were present in 90% of the women while only in 30% of the men. Other correlates included hiked B.M.I, habit of smoking and hypertension in men while in women the common correlates were high blood pressure, history of use of oral contraceptive pills and aura.

**Conclusion:** Stroke is a major contributor to the disease burden in the developing world and particularly in Pakistan. Predictors and contributors to stroke deserve great importance and thus should be kept under a watchful eye. Individuals who happen to exhibit such predictors should be identified as the "at-risk" population and advised to take greater care of themselves to prevent ultimate incidence of stroke.

**Key Words:** Ischaemic stroke, Haemorrhagic stroke, Migraine, Aura.

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Please cite this article in press as Muhammad Iqbal Shah et al, *Retrospective Analysis of Incidence of Migraine in Patients of Ischaemic Stroke*, Indo Am. J. P. Sci, 2017; 4(05).

**INTRODUCTION:**

Stroke, the 2<sup>nd</sup> greatest reason of debility in the modern era and the 2<sup>nd</sup> most prevalent reason of demise worldwide, crossed ahead by only coronary heart disease [1]. The latest review of epidemiological studies investigating the incidence of stroke, and its debility shows that the incidence and prevalence of stroke is expected to rise, basically owing to the increasing age of the masses and disease-inviting factors of lifestyle [2]. Significant debility is also associated with migraine headaches. Every seventeen out of hundred women and six out of hundred men suffer from migraine and this can be devastating[3,4]. Migraine has always been projected as a risk factor for ischemic stroke in conjunction with conventional risk factors such as atrial fibrillation and atherosclerosis [5]. Numerous previous systematic reviews have claimed a hike in probability of stroke in some migraine prone samples [6,7] Ischemic stroke amounts to over eighty percent of all incidences of stroke [8] and migraine is a capably moldable risk factor. Thus, understanding better, the link between ischemic stroke and migraine crucial.

Stroke and migraine are two largely prevalent ailments that seemingly have less in common. Migraine is a short-term ailment that continues to return in episodes throughout lifetime; it characteristically begins before the age of forty years and targets twelve percent of the epidemiology with three to one women prevalence. Episodes of transient neurological disturbances followed by attacks of headache characterize migraine. Whether or not migraine is a sole anomaly, an amalgam of associated ailments, or a syndrome generated from other diseases is still no graspable.

A solely clinical and strict criterion is in place by the HIS (International Headache Society) to diagnose migraine [8]. On the contrary, stroke is a mal-event that is very acute in nature and occurs in two per thousand individuals per annum at an average age of seventy years with a two to one male majority. Categorized by an acute onset focal deficit, a stroke is an easily identifiable

phenomenon ever since the advent of modern neuroimaging techniques. While an episode of stroke, intracerebral hemorrhage occurs in twenty percent of the cases and cerebral infarction occurs in eighty percent of the incidences. The reasons leading to both the types of stroke are different; in individual subjects, in particular in those who are young. The reason stays elusive despite much research. Despite the disparities, much research suggests an intricate bidirectional link between stroke and migraine[9-11]. The links emphasize on the role of migraine in making an individual susceptible to stroke, the role of migraine in causing or enhancing the risk or even a consequence of cerebral ischaemia. In addition to the aforementioned, cerebral ischaemia and migraine share a common cause.

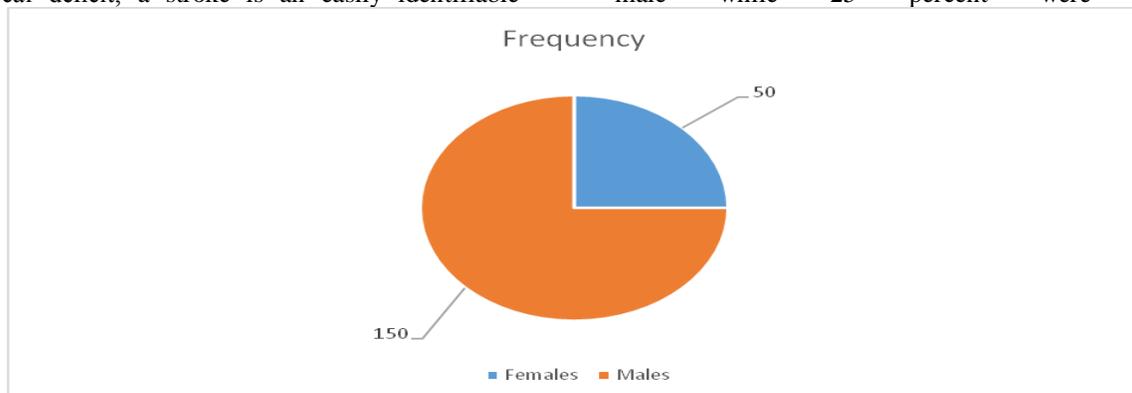
The rather perplexing relationship between stroke and migraine has always been a subject of confusion for neurologists. Since stroke is more dangerous of the two, our research indulges in only one direction, i.e. exploring whether a migraine can heighten the risk of a stroke by retrospectively studying the incidence of migraine in patients presenting with stroke at the study setting.

**METHODOLOGY:**

The observational study was carried upon a total of 200 patients presenting with stroke at the medicine outpatient department of Liaquat University Hospital (Hyderabad and Jamshoro). Data was collected using a self-structured, closed ended, standard questionnaire that included necessary inquiries to establish whether the patient had suffered from migraines in the past. C.T scans were adopted as the tool to determine the legibility of stroke. The research lasted for a total of 18 months. Data was analyzed using SPSS v. 17.0 and Ms. Excel 365.

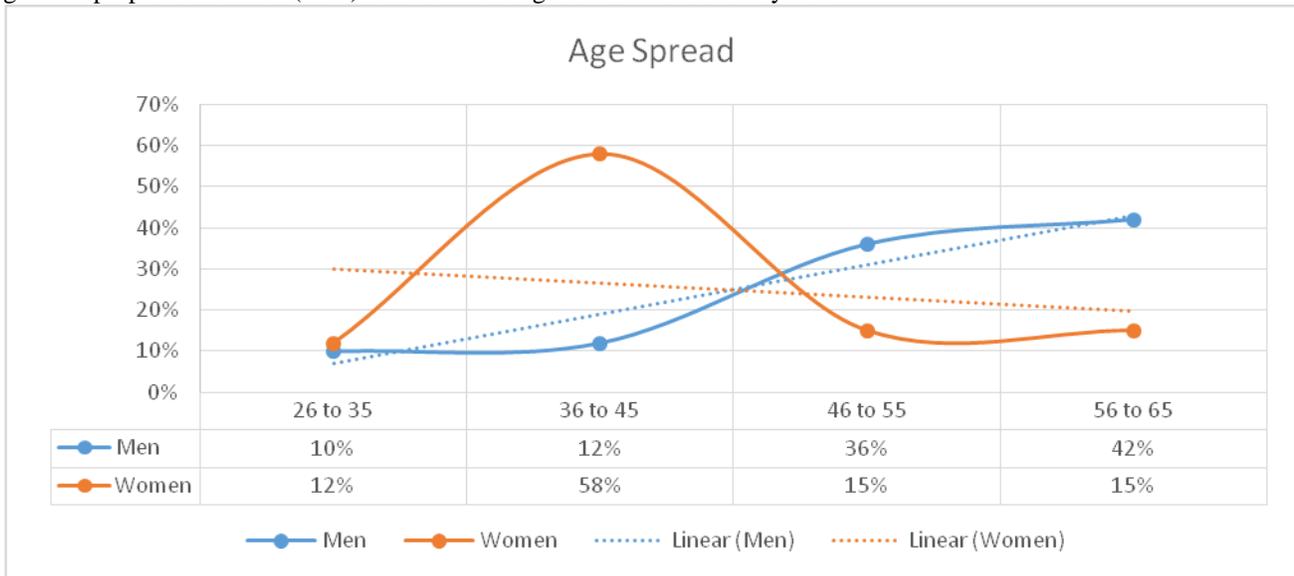
**RESULTS:**

The largest proportion of the sample fell within the age bracket of 25 – 63 years. 75 percent of the patients were male while 25 percent were females



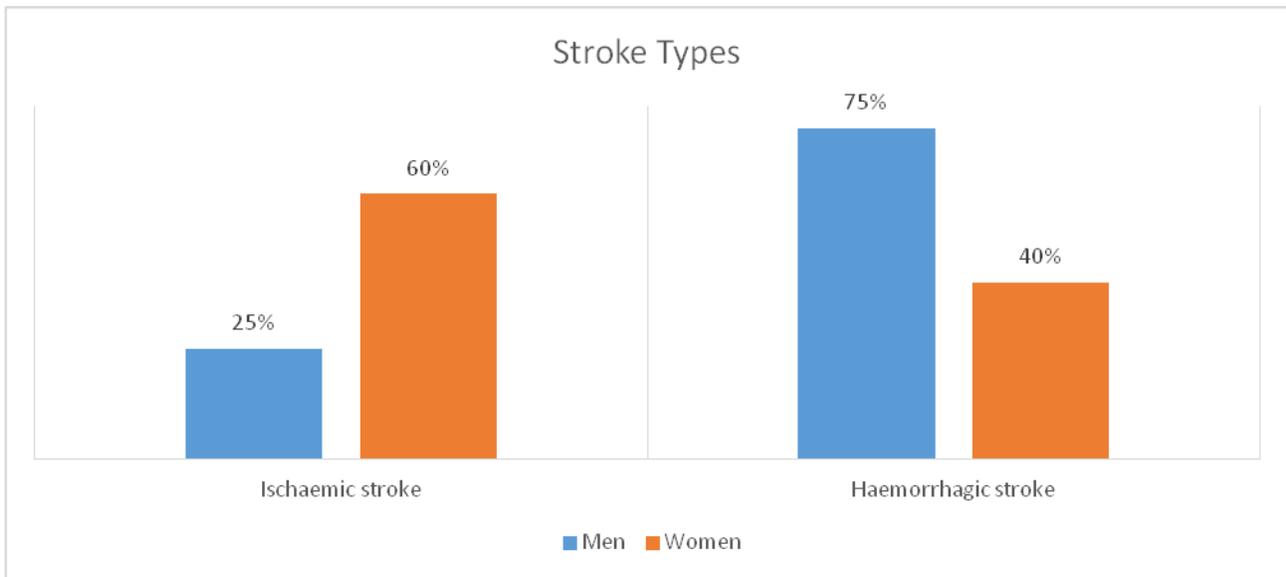
**Fig 1: Men fell prey to the cerebrovascular accident i.e. stroke, more often than women to almost a 3:1 ratio. It should not be forgotten that patients presenting at the hospital are not an exact indicator since not all patients reach out for help yet it is the nearest possible estimate that can be drawn and hence workable.**

The greatest proportion of women (58%) presenting with stroke fell within the age bracket of 36 to 45 years while the greatest proportion of men (42%) fell within the age bracket of 56 to 65 years.



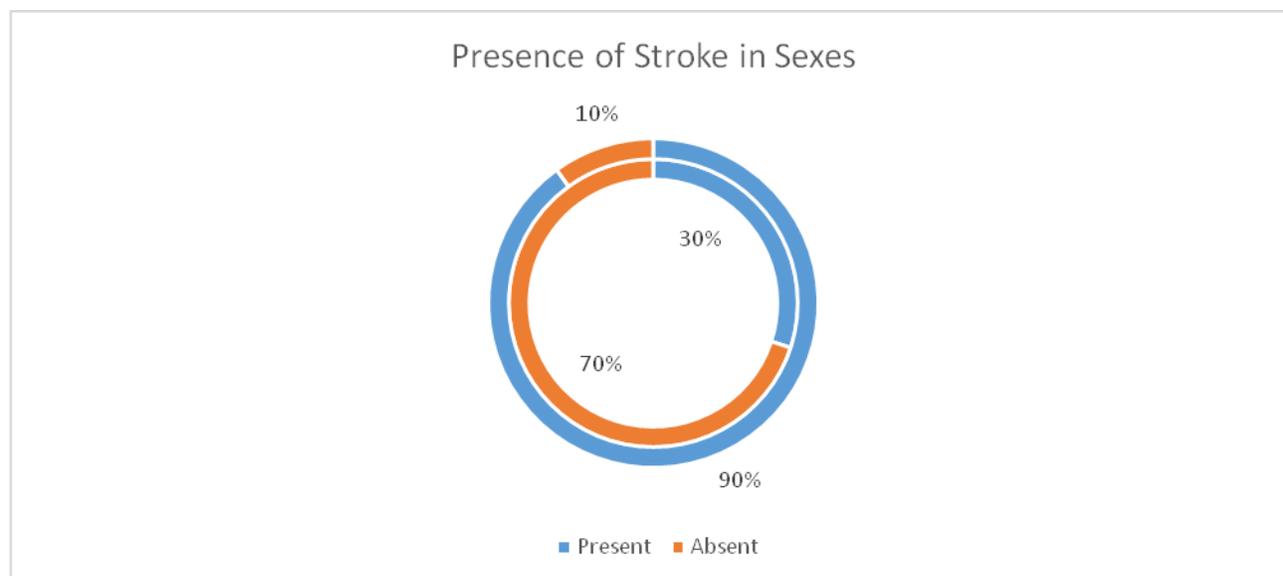
**Fig 2: The linear trends show that incidence of stroke increases with age in men. However, in women the trend is a little more complex to be explained linearly. Women present more during middle age that co-incidentally happens to be their migraine prone age as well.**

Among women ischaemic stroke was more common (60%) while haemorrhagic stroke was more common in men (75%).



**Fig 3: In line with our hypothesis, the results indicate that women experience ischaemic events far more often than men do. However, the less migraine prone men, experience the other type of mal-cerebrovascular events i.e. haemorrhagic strokes.**

Migraines were present in 90% of the women while only in 30% of the men.



**Fig 4: Our results were in conjunction with the results shown in literature. Women had nearly a threefold incidence of stroke when compared to that of men.**

Other correlates included hiked B.M.I, habit of smoking and hypertension in men while in women the common correlates were high blood pressure, history of use of oral contraceptive pills and aura.

#### DISCUSSION:

In an attempt to clarify the relationship between stroke and migraine, many entities are suggested to classify migraine-related stroke. The 1<sup>st</sup> being mutually occurring migraine and stroke. When the 2 ailments exist mutually patients of young age, the reason behind stroke can be tough to elucidate, even if it appears to be multifaceted. Fresh academic literature suggests that migraine is linked to A.S.A (atrial septal aneurysm) and P.F.O (Patent Foramen Ovale) patients of ischaemic stroke[10], and a greater frequency of Patent Foramen Ovale was apparent in persons who suffered from migraine with an aura [11]. In a prospective research of cryptogenic stroke forty six percent of patients had a Patent Foramen Ovale and migraine was present in twenty seven out of every hundred patients with P.F.O. Migraine was evident in thirty six percent of patients with Patent Foramen Ovale and stroke, while only sixteen percent of patients without Patent Foramen Ovale with stroke suffered from a migraine [12]. In subjects suffering from this ailment, a probable reason of ischaemic stroke can be a hiked vulnerability to paradoxical cerebral embolism during attacks of migraine, concurrently with hyper-coagulable conditions. In addition to that, in miniscule non-controlled series, it has been seen that percutaneous closure of Patent Foramen Ovale can lessen the chances of ischaemic stroke and reduce the migraine attack frequency [13], hinting at the possibility of migraine being a symptom of cardio-embolism.

Symptomatic migraine, another worrying entity, belongs to the next category of migraine-related stroke. Here,

migraine is a clinical product of an underlying ailment such as neurological diseases or arteriovenous malformations [14] and cerebral autosomal dominant arteriopathy with subcortical infarcts and leukoencephalopathy [15]. Patients suffering from migraine are at a greater risk for arterial dissection. Fresh additions to the pool of academic literature exhibit a strong link between dissection of carotid artery and migraine [16]. This shows that a disease of endothelium origin may make one vulnerable to developing migraine [17]. A probable birthplace for symptoms of migraine, given the frequent co-existence of facial pain with carotid artery dissection, is through trigeminal innervation [18-19]. Evidence thus suggests that young women with migraine have a higher probability of developing subclinical lesions in such areas of the brain [20].

#### CONCLUSION:

Stroke is a major contributor to the disease burden in the developing world and particularly in Pakistan. Predictors and contributors to stroke deserve great importance and thus should be kept under a watchful eye. Individuals who happen to exhibit such predictors should be identified as the “at-risk” population and advised to take greater care of themselves to prevent ultimate incidence of stroke. Clinicians should also pay greater attention to such predictors and employ greater alertness while on duty to recognize them so that the required pre-emptive care and knowledge can be provided to the “at-risk” patients.

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