REVIEW OF LITERATURE

The brain is worth so much as it is the most important, sensitive organ which controls our body. It is more powerful than any other modern computer. Diseases of the brain usually disable a person or make life collapse. Headache and Migraine are some of those diseases which affect it. Despite substantial research efforts, the etiology of headache syndromes remains poorly understood. Because headache is commonly associated with psychiatric syndromes, psychiatrists are often consulted for the evaluation and treatment of people suffering from headache.

Headache is one of the most common human afflictions. Ten percent of all people report that headache leads to impairment in their daily life. It has dramatic impact on occupational and social disability and the use of health services.¹¹

GENERAL PRINCIPLES

A classification system developed by the International Headache Society² characterizes headache as 1) primary, 2) secondary and 3) Cranial Neuralgias. Primary headaches are those in which headache and its associated features are the disorder in itself, whereas secondary headaches are those caused by exogenous disorders. Pain in the head and neck is mediated by afferent fibers in the trigeminal nerve. Nervus intermedius,
glossopharyngeal, vagus nerves and the upper cervical roots via the occipital nerves is called Cranial Neuralgias Central and Primary Facial Pain, Other Headache. Primary headache often results in considerable disability and a decrease in the patient's quality of life. Mild secondary headache, such as that seen in association with upper respiratory tract infections, is common but rarely worrisome. Life-threatening headache is relatively uncommon, but vigilance is required in order to recognize and appropriately treat patients with this category of head pain.²

**Primary headache:**

The primary headaches are a group of fascinating syndromes in which headache and associated features are seen in the absence of any exogenous cause. The common syndromes (Table 1) are tension-type headache, migraine, cluster headache and the collection of headaches known as primary chronic daily or frequent, headache.¹²

**Secondary headache:**

The management of secondary headache (Table-2) is generally the treatment of the underlying condition such as an infection or mass lesion. An exception is the condition of chronic post-traumatic headache in which pain persists for long periods after head injury. This is an interesting generic problem which may be seen after central nervous system infection, trauma, both blunt and surgical, intracranial bleeds, and other precipitants. While the
syndrome is generally self-limiting up to 3 to 5 years after the event, it may require treatment of the headache.  

**Cranial Neuralgias Central and Primary Facial Pain, Other Headache:**

Pain in the head and neck is mediated by afferent fibers in the trigeminal nerve, nervus intermedius, glossopharyngeal and vagus nerves and the upper cervical roots via the occipital nerves. Stimulation of these nerves by compression, distortion, exposure to cold or other forms of irritation or by a lesion in central pathways may give rise to stabbing or constant pain felt in the area innervated. The cause may be clear, such as infection by herpes zoster or a structural abnormality demonstrated by imaging, but in some cases there may be no cause apparent for neuralgic pain. Trigeminal and glossopharyngeal neuralgias present a problem of terminology. When pain is found to result from compression of the nerve by a vascular loop at operation, the neuralgia should strictly be regarded as secondary. Since many patients do not come to operation, it remains uncertain, whether they have primary or secondary neuralgias. For this reason the term classical rather than primary has been applied to those patients with a typical history even though a vascular source of compression may be discovered during its course. (Table-3) The term secondary can then be reserved for those patients in whom a neuroma or similar lesion is demonstrated. Another difficulty arises with the condition that used to be
known as atypical facial pain (an inappropriate term since many cases conform to a pattern). The fact that some cases follow surgery or injury to the face, teeth or gums suggests the possibility of an infectious or traumatic cause. Until more is known of the condition, persistent idiopathic facial pain seems a preferable non-committal title.  

**TABLE 1: Primary headache**

1. Migraine  
2. Tension-type headache  
3. Cluster headache and other trigeminal autonomic cephalalgias  
4. Other primary headaches  

**TABLE 2: Secondary headache**

1. Headache attributed to head and/or neck trauma  
2. Headache attributed to cranial or cervical vascular disorder  
3. Headache attributed to non-vascular intracranial disorder  
4. Headache attributed to a substance or its withdrawal  
5. Headache attributed to infection  
6. Headache attributed to disorder of homeostasis  
7. Headache or facial pain attributed to disorder of cranium, neck, eyes, ears, nose, sinuses, teeth, mouth or other facial or cranial structures  
8. Headache attributed to psychiatric disorder.
TABLE 3: Cranial Neuralgias Central and Primary Facial Pain, Other

Headache

1. Cranial neuralgias and central causes of facial pain
2. Other headache, cranial neuralgia, central or primary facial pain

TABLE 4: Warning signs in head pain

- Sudden onset of pain
- Fever
- Marked change in the character or timing of pain
- Neck stiffness
- Pain associated with higher centre complaints
- Pain associated with neurological disturbance, such as clumsiness or weakness

Pain associated with local tenderness, such as of the temporal artery.

The most important topic of this dissertation is Migraine so it should be discussed in depth.

HISTORY OF MIGRAINE: -

- 19000 years old skull exists; it is the evidence of trephination. It is hypothesized that this drastic step was taken in response to headache though there is no clear evidence proving it.
- Headache with neuralgia was recorded in medical documents of ancient Egyptian as earlier as 1200 B.C.
• **HIPPOCRATES**, writing as early as 400 B.C., was the first to depict the visual symptoms of migraine of his own attacks; he described a shining light – usually located in the right eye – followed by violent Pain beginning in the temples and eventually reaching the entire head and neck. Its nature and causes puzzled for two thousand years.  

• **GALENUS** use the term **HEMICRANIA** from which the word **migraine** was derived, he thought there was a connection between the stomach and the brain because of the nausea and vomiting that often accompany an attack.  

• **SYDENHAM-THOMAS**: English physician (1624 – 1689) He was one of the finest clinical observer of the the 18th century. He made no arbitrary distinctions between physical and emotional symptoms: all had to considered together as integral parts of “nervous disorder”.  

• **ARETEUS** - Told about the headache of one side.  

• **ALEXANDER TRALLIANUS** - (525-605), He wrote about two categories of theory which have dominated medical thinking on the nature of Migraine - one was humoral theory and another was Sympathetic theory. Two categories of theory have dominated medical thinking on the nature of migraine since the time of Hippocrates; both were still a matter of serious dispute at the end of the 18th century.
• THOMAS WILLIS - Classical notion of sympathy were given by him in exact form. Willis discussing Migraine shows himself by many predisposing, exciting and accessory causes. A classical concept revived by willis was that of “idiopathy” a tendency to periodic and sudden explosion in the nervous system.14

• In Bibliotheca Anatomica, Medic, Chirurgica, published in London in 1712, five major types of headaches are described, including the "Megrim", recognizable as classic migraine. Graham and Wolff (1938) published their paper advocating ergotamine tart for relieving migraine. Later in the 20th century, Harold Wolff (1950) developed the experimental approach to the study of headache and elaborated the vascular theory of migraine, which has come under attack as the pendulum again swings to the neurogenic theory.13

• Edward Living’s treatise on Megrim, Sick Headache and Allied disorders, published in 1873, is a remarkably penetrating work and contains much valuable comments on migraine. An essential part of Living’s vision (and in this he was more related to Willis and Whyt than to his contemporaries) was the realization that the verities of migraine were endless in number and that they coalesced with many other paroxysmal reactions. His own theory of “nerve-storms” of great generality and power, explained , as no other theory could.14
DEFINITION: -

Migraine is a benign and recurring syndrome of episodic headache that is associated with certain features such as sensitivity to light, sound, or movement, nausea and vomiting often accompany the headache. Actually Migraine, or the “sick headache”, is derived from the Greek word meaning “pain involving half of the head”. It is a common problem that affects about one person in 10. It is more common in females and is worse between the ages of 20 and 50 but usually improves with age.²

It tends to run in families. Headache preceded by the “aura” and then nausea and vomiting is called “CLASSICAL MIGRAINE”. And that without the “aura” of alter vision is called “COMMON MIGRAINE”.³

SYMPTOMS OF MIGRAINE –

Migraine can take several different forms and can vary from persons to persons but the most common feature is the severe headache. About one in five people with Migraine experience an “aura”, or warning, (especially affecting vision) 10-30 minutes before the headache.³

A) TABLE-5 The Pain³:

- Varies from moderate to severe
- A throbbing or pulsating
- Usually on one side of the head
• Often behind the eye
• Can be aggravated by movement
• Pain can be spasmodic, occurring weekly some and once a year or so in others. The length of each attack is variable but can last from four hours to 2-3 days, with an average duration of 6-8 hours.  

B) TABLE-6: other possible symptoms:

• Altered vision (eg. Lines or spots before the eyes)
• Nausea and vomiting
• Intolerance to bright light
• Intolerance to loud noise
• Cold hands

TABLE-7: SYMPTOMS ACCOMPANYING SEVERE MIGRAINE ATTACKS IN 500 PATIENTS

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Patients Affected (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nausea</td>
<td>87</td>
</tr>
<tr>
<td>Photophobia</td>
<td>82</td>
</tr>
<tr>
<td>Lightheadedness</td>
<td>72</td>
</tr>
<tr>
<td>Scalp tenderness</td>
<td>65</td>
</tr>
<tr>
<td>Vomiting</td>
<td>56</td>
</tr>
<tr>
<td><strong>Symptom</strong></td>
<td><strong>Patients Affected (%)</strong></td>
</tr>
<tr>
<td>-----------------------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>Visual disturbances</td>
<td>36</td>
</tr>
<tr>
<td>Fortification spectra</td>
<td>10</td>
</tr>
<tr>
<td>Paresthesias</td>
<td>33</td>
</tr>
<tr>
<td>Vertigo</td>
<td>33</td>
</tr>
<tr>
<td>Alteration of consciousness</td>
<td>18</td>
</tr>
<tr>
<td>Syncope</td>
<td>10</td>
</tr>
<tr>
<td>Seizure</td>
<td>4</td>
</tr>
<tr>
<td>Confusional state</td>
<td>4</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>16</td>
</tr>
</tbody>
</table>

**INCIDENCE**

25% of women and 8% of men get migraines sometime in their lifetime. About half of these people get their first migraine before the age of 20, and 98% before the age of 50. 5% get migraine before they're 15 years old and about a third of those get migraine before they're even 5! Most migraines, however, occur between the ages of 25 and 50. According the KidsHealth.org, up to 10% of children between 5 and 15 may experience migraine. Before puberty, girls and boys are almost equal in the migraines they suffer, possibly due to the estrogen changes that women go through at various stages in life. About 70% have some other close (first degree) relative with migraine.²
The four phases of a migraine attack listed below are common but not necessarily experienced by all migraine suffers. The prodrome, which occurs hours or days before the headache. The aura, which immediately precedes the headache. The pain phase, also known as headache phase and lastly the postdrome phase, here patients may feel tired, have head pain, cognitive difficulties, gastrointestinal symptoms, etc.\textsuperscript{2,12}

**ACTIVATING FACTORS**

Migraine triggers are different for everyone, and so the list could be very long. Below are some of the more common triggers, using the categories of internal and external. This does not mean that every one of these things could trigger a migraine. It's likely that you react to only a handful, or one, or none of these. The list below contains some links to other articles relating to that particular trigger.\textsuperscript{15,16}

**HORMONAL CHANGES**

This includes changes during puberty, menstruation, pregnancy, menopause and changes due to birth control pills or HRT (hormone replacement therapy).\textsuperscript{15,16}
CHANGES IN YOUR DAILY SCHEDULE

Oversleeping, not getting enough sleep, and skipping a meal, a rest after a hectic schedule.\textsuperscript{15,16}

WEATHER

Particularly rapidly dropping barometric pressure, but also rising pressure, temperature or humidity. Walking into a headwind can trigger migraines in some.\textsuperscript{15,16}

FOODS

Foods high in tyramine are believed to be among the worst migraine triggers. This would include things such as aged cheese and meats. There are many foods that could trigger migraine. Caffeine, chocolate, bananas, MSG (found in things such as canned stews, soya sauce, and powdered soups), and citrus fruits. Visit our page on diet and migraine for more on dietary migraine triggers.\textsuperscript{15,16}

ENVIRONMENT

This could include cigarette smoke, perfumes, or fresh paint.\textsuperscript{15,16}

ANTI ACTIVATORS\textsuperscript{12}

- Sleep
- Pregnancy
- Exhilaration
- Triptans
PATHOGENESIS OF MIGRAINE

Limited information about the pathophysiology of migraine may leads to diagnostic and therapeutic challenges, as well as delayed and/or partial relief, with risk of progression from a relapsing/remitting state to a chronic, more severe condition

• GENETIC BASIS OF MIGRAINE

Migraine has a definite genetic predisposition. Specific mutations leading to rare causes of vascular headache have been identified. For example, the MELAS syndrome consists of a mitochondrial encephalomyopathy, G point mutation in the mitochondrial gene encoding for tRNALeu (UUR) at nucleotide position 3243. Episodic migraine-like headaches are another common clinical feature of this syndrome, especially early in the course of the disease. The genetic pattern of mitochondrial disorders is unique, since only mothers transmit mitochondrial DNA. Thus, all children of mothers with MELAS syndrome are affected with the disorder.\(^\text{18}\)

Approximately 50% of cases of Familial hemiplegic migraine (FHM) appear to be caused by mutations within the CACNL1A4 gene on chromosome 19, which encodes a P/Q type calcium channel subunit expressed only in the central nervous system. The gene is very large (>300 kb in length. Four distinct point mutations have been identified within the gene (in five different families) that co segregates with the clinical diagnosis of FHM.
Analysis of haplotypes in the two families with the same mutation suggests that each mutation arose independently rather than representing a founder effect. CACNL1A4 is likely to play a role in calcium-induced neurotransmitter release and/or contraction of smooth muscle.  

In a genetic association study, a NcoI polymorphism in the gene encoding the D2 dopamine receptor (DRD2) was overrepresented in a population of patients with migraine with aura compared to a control group of non-migraineurs, suggesting that susceptibility to migraine with aura is modified by certain DRD2 alleles. In a Sardinian population, an association between different DRD2 alleles and migraine has also been demonstrated. These initial studies suggest that variations in dopamine receptor regulation and/or function may alter susceptibility to migraine since molecular variations within the DRD2 gene have been associated with variations in dopaminergic function. However, since not all individuals with the implicated DRD2 genotypes suffer from migraine with aura, additional genes or factors must also be involved. Migraine is likely to be a complex disorder with polygenic inheritance and a strong environmental component.  

Migraine is a disabling common brain disorder typically characterized by attacks of severe headache and associated with autonomic and neurological symptoms. Its etiology is far from resolved. Epigenetic comprise both DNA methylation and post-translational modifications of the tails of histone
proteins, affecting chromatin structure and gene expression. Besides playing a role in establishing cellular and developmental stage-specific regulation of gene expression, epigenetic processes are also important for programming lasting cellular responses to environmental signals. Epigenetic mechanisms may explain how non-genetic endogenous and exogenous factors such as female sex hormones, stress hormones and inflammation trigger may modulate attack frequency. Developing drugs that specifically target epigenetic mechanisms may open up exciting new avenues for the prophylactic treatment of migraine. In a subgroup of patients the migraine attack frequencies may dramatically increase up to near daily attacks, affecting their daily life, but the exact mechanism for chronification is unknown. Epigenetic mechanisms may underlie a part of migraine pathophysiology (and even the chronification of migraine) and therefore might provide a novel promising avenue for improving pharmacotherapy. More research is required to identify (epigenetic) targets that affect migraine Pathophysiology as well as epigenetic drugs that specifically act to modulate chromatin structure at migraine pathways and can be used as a target in the prophylactic treatment for migraine.\textsuperscript{22}

- **THE VASCULAR THEORY OF MIGRAINE**

   It was widely held for many years that the headache phase of migrainous attacks was caused by extracranial vasodilatation and that the neurologic symptoms were produced by intracranial vasoconstriction (i.e., the
"vascular" hypothesis of migraine). Regional cerebral blood flow studies have shown that in patients with classic migraine there is, during attacks, a modest cortical hypoperfusion that begins in the visual cortex and spreads forward at a rate of 2 to 3 mm/min. The decrease in blood flow averages 25 to 30% (insufficient to explain symptoms on the basis of ischemia) and progresses anteriorly in a wavelike fashion independent of the topography of cerebral arteries. The wave of hypoperfusion persists for 4 to 6 h, appears to follow the convolutions of the cortex, and does not cross the central or lateral sulcus, progressing to the frontal lobe via the insula. Perfusion of subcortical structures is normal. Contralateral neurologic symptoms appear during temporoparietal hypoperfusion; at times, hypoperfusion persists in these regions after symptoms cease. More often, frontal spread continues as the headache phase begins. A few patients with classic migraine show no flow abnormalities; an occasional patient has developed focal ischemia sufficient to cause symptoms. However, focal ischemia does not appear to be necessary for focal symptoms to occur.²

The ability of these changes to induce the symptoms of migraine has been questioned. Specifically, the decrease in blood flow that is observed does not appear to be significant enough to cause focal neurologic symptoms. Second, the increase in blood flow per se is not painful, and vasodilatation alone cannot account for the local edema and focal tenderness often observed in
migraineurs. Moreover, in migraine without aura, no flow abnormalities are usually seen. Thus, it is unlikely that simple vasoconstriction and vasodilatation are the fundamental pathophysiologic abnormalities in migraine. However, it is clear that cerebral blood flow is altered during certain migraine attacks, and these changes may explain some, but clearly not all, of the clinical syndrome of migraine.\textsuperscript{2,16}

**THE NEURONAL THEORY OF MIGRAINE**

Fortification spectrum is a migraine aura characterized by a slowly enlarging visual scotoma with luminous edges. It is believed to result from spreading depression, a slowly moving (2 to 3 mm/min), potassium-liberating depression of cortical activity, preceded by a wave front of increased metabolic activity. Spreading depression can be produced by a variety of experimental stimuli, including hypoxia, mechanical trauma, and the topical application of potassium. These observations suggest that neuronal abnormalities could be the cause of a migraine attack.\textsuperscript{2,16}

Physiologically, electrical stimulation near dorsal raphe neurons in the upper brainstem can result in migraine-like headaches. Blood flow in the pons and midbrain increases focally during migraine headache episodes.

This alteration probably results from increased activity of cells in the dorsal raphe and locus coeruleus. There are projections from the dorsal raphe that
terminate on cerebral arteries and alter cerebral blood flow. There are also major projections from the dorsal raphe to important visual centers, including the lateral geniculate body, superior colliculus, retina, and visual cortex. These various serotonergic projections may represent the neural substrate for the circulatory and visual characteristics of migraine. The dorsal raphe cells stop firing during deep sleep, and sleep is known to ameliorate migraine; the antimigraine prophylactic drugs also inhibit activity of the dorsal raphe cells through a direct or indirect agonist effect.

Positron emission tomography (PET) scan studies have demonstrated that midbrain structures near the dorsal raphe are activated during a migraine attack. In one study of acute migraine, an injection of sumatriptan relieved the headache but did not alter the brainstem changes noted on the PET scan. These data suggest that a "brainstem generator" may be the cause of migraine and that certain antimigraine medications may not interfere with the underlying pathologic process in migraine.² ¹⁶

**THE TRIGEMINOVASCULAR THEORY OF MIGRAINE:**

Activation of cells in the trigeminal nucleus caudalis in the medulla (a pain-processing center for the head and face region) results in the release of vasoactive neuropeptides, including substance P and calcitonin gene-related peptide, at vascular terminations of the trigeminal nerve. These peptide neurotransmitters have been proposed to induce a sterile inflammation that
activates trigeminal nociceptive afferents originating on the vessel wall, further contributing to the production of pain.

This provides a potential mechanism for the soft tissue swelling and tenderness of blood vessels that accompany migraine attacks. However, numerous pharmacologic agents that are effective in preventing or reducing inflammation in this animal model (e.g., selective 5-HT1D agonists, NK-1 antagonists, endothelin antagonists) have failed to demonstrate any clinical efficacy in migraine trials. (2)

Recent experimental studies have shown that prostaglandins are distributed in the trigeminal–vascular system and its receptors are localized in the trigeminal ganglion and the trigeminal nucleus caudalis. Prostaglandins were found in smooth muscles of cranial arteries, and functional studies in vivo showed that prostaglandins induced dilatation of cranial vessels. Human studies showed that intravenous infusion of vasodilating prostaglandins such as prostaglandin E2 (PGE2), prostaglandin I2 (PGI2) and prostaglandin D2 (PGD2) induced headache and dilatation of intra-cranial and extra-cranial arteries in healthy volunteers. In contrast, infusion of non-dilating prostaglandin F2α (PGF2α) caused no headache or any vascular responses in cranial arteries. PGE2 and PGI2 triggered migraine-like attacks in migraine patients without aura, accompanied by dilatation of the intra-cerebral and

Recent in-vitro/in-vivo data demonstrated presence and action of prostaglandins within the trigeminal pain pathways. Migraine induction after intravenous administration of PGE$_2$ and PGI$_2$ suggests a specific blockade of their receptors, EP and IP respectively, as a new potential drug target for the acute treatment of migraine$^{20}$

Migraine is a collection of perplexing neurological conditions in which the brain and its associated tissues have been implicated as major players during an attack. Once considered exclusively a disorder of blood vessels, compelling evidence has led to the realization that migraine represents a highly choreographed interaction between major inputs from both the peripheral and central nervous systems, with the trigeminovascular system and the cerebral cortex among the main players. Advances in in vivo and in vitro technologies have informed us about the significance to migraine of events such as cortical spreading depression and activation of the trigeminovascular system and its constituent neuropeptides, as well as about the importance of neuronal and glial ion channels and transporters that contribute to the putative cortical excitatory/inhibitory imbalance that renders migraineurs susceptible to an attack. This review focuses on
emerging concepts that drive the science of migraine in both a mechanistic direction and a therapeutic direction.  

- **5-HYDROXYTRIPTAMINE IN MIGRAINE**

Pharmacologic and other data point to the involvement of the neurotransmitter 5-hydroxytryptamine (5-HT; also known as serotonin) in migraine. Approximately 40 years ago, methysergide was found to antagonize certain peripheral actions of 5-HT and was introduced as the first drug capable of preventing migraine attacks. Subsequently, it was found that platelet levels of 5-HT fall consistently at the onset of headache and that drugs that cause 5-HT to be released may trigger migrainous episodes. Such changes in circulating 5-HT levels proved to be pharmacologically trivial, however, and interest in the humoral role of 5-HT in migraine declined. 

More recently, interest in the role of 5-HT6 in migraine has been renewed due to the introduction of the triptan class of antimigraine drugs. The triptans are designed to stimulate selectively a particular subpopulation of 5-HT receptors. At least 14 specific 5-HT receptors exist in humans. The triptans (e.g., naratriptan, rizatriptan, sumatriptan, and zolmitriptan) are potent agonists of 5-HT1B, 5-HT1D, and 5-HT1F receptors and are less potent at 5-HT1A and 5-HT1E receptors. A growing body of data indicates that the antimigraine efficacy of the triptans relates to their ability to stimulate 5-HT1B receptors, which are located on both blood vessels and nerve
terminals. Selective 5-HT1D receptor agonists have, thus far, failed to demonstrate clinical efficacy in migraine. Triptans that are weak 5-HT1F agonists are also effective in migraine; however, only 5-HT1B efficacy is currently thought to be essential for antimigraine efficacy.  

**DOPAMINE IN MIGRAINE**
A growing body of biologic, pharmacologic, and genetic data supports a role for dopamine in the pathophysiology of certain subtypes of migraine. Most migraine symptoms can be induced by dopaminergic stimulation. Moreover, there is dopamine receptor hypersensitivity in migraineurs, as demonstrated by the induction of yawning, nausea, vomiting, hypotension, and other symptoms of a migraine attack by dopaminergic agonists at doses that do not affect nonmigraineurs. Conversely, dopamine receptor antagonists are effective therapeutic agents in migraine, especially when given parenterally or concurrently with other antimigraine agents. As noted above, genetic data also suggest that molecular variations within dopamine receptor genes play a modifying role in the pathophysiology of migraine with aura. Therefore, modulation of dopaminergic neurotransmission should be considered in the therapeutic management of migraine.
THE SYMPATHETIC NERVOUS SYSTEM OF MIGRAINE

Alterations occur within the sympathetic nervous system (SNS) of migraineurs before, during, and between migraine attacks. Factors that activate the SNS are all triggers for migraine. Specific examples include environmental changes (e.g., stress, sleep patterns, hormonal shifts, hypoglycemia) and agents that cause release and a secondary depletion of peripheral catecholamines (e.g., tyramine, phenylethylamine, fenfluramine, m-chlorophenylpiperazine, and reserpine). By contrast, effective therapeutic approaches to migraine share an ability to mimic and/or enhance the effects of norepinephrine in the peripheral SNS. For example, norepinephrine itself, sympathomimetics (e.g., isometheptene), monoamine oxidase inhibitors (MAOIs), and reuptake blockers alleviate migraine. Dopamine antagonists, prostaglandin synthesis inhibitors, and adenosine antagonists are pharmacologic agents effective in the acute treatment of migraine. These drugs block the negative feedback inhibition or norepinephrine release induced by endogenous dopamine, prostaglandins, and adenosine. Therefore, migraine susceptibility may relate to genetically based variations in the ability to maintain adequate concentrations of certain neurotransmitters within postganglionic sympathetic nerve terminals. This hypothesis has been called the empty neuron theory of migraine.\(^2\)\(^{16}\)
TYPES OF MIGRAINE:-

According to The International Classification of Headache Disorders 2nd Edition (ICHD-2), there are six subclasses of migraines (some of which include further subdivisions) Given in Table-5.

**TABLE-8: CLASSIFICATIONS OF MIGRAINE**

1.1 Migraine without aura

1.2 Migraine with aura

1.2.1 Typical aura with migraine headache

1.2.2 Typical aura with non-migraine headache

1.2.3 Typical aura without headache

1.2.4 Familial hemiplegic migraine (FHM)

1.2.5 Sporadic hemiplegic migraine

1.2.6 Basilar-type migraine

1.3 Childhood periodic syndromes that are commonly precursors of migraine

1.3.1 Cyclical vomiting

1.3.2 Abdominal migraine

1.3.3 Benign paroxysmal vertigo of childhood

1.4 Retinal migraine

1.5 Complications of migraine

1.5.1 Chronic migraine
1.5.2 Status migrainosus

1.5.3 Persistent aura without infarction

1.5.4 Migrainous infarction

1.5.5 Migraine-triggered seizures

1.6 Probable migraine

1.6.1 Probable migraine without aura

1.6.2 Probable migraine with aura

1.6.5 Probable chronic migraine

Migraine-like headache secondary to another disorder (symptomatic migraine) is coded according to the disorder.

1.1 Migraine without aura (common migraine):

In this syndrome no focal neurologic disturbance precedes the recurrent headaches. Migraine without aura is by far the more frequent type of vascular headache. The International Headache Society criteria for migraine include moderate to severe head pain, pulsating quality and unilateral location, aggravation by walking stairs or similar routine activity, attendant nausea and/or vomiting, photophobia and phonophobia, and multiple attacks, each lasting 4 to 72 hour. ²
1.2 Migraine with aura (Classic Migraine):-

In this syndrome headache is associated with characteristic premonitory sensory, motor, or visual symptoms. Focal neurologic disturbances are more common during headache attacks than as prodromal symptoms. Focal neurologic disturbances without headache or vomiting have come to be known as migraine equivalents or migraine accompaniments and appear to occur more commonly in patients between the ages of 40 and 70 years. The term complicated migraine has generally been used to describe migraine with dramatic transient focal neurologic features or a migraine attack that leaves a persisting residual neurologic deficit. The most common premonitory symptoms reported by migraineurs are visual, arising from dysfunction of occipital lobe neurons.

Scotomas and/or hallucinations occur in about one-third of migraineurs and usually appear in the central portions of the visual fields. A highly characteristic syndrome occurs in about 10% of patients; it usually begins as a small paracentral scotoma, which slowly expands into a "C" shape. Luminous angles appear at the enlarging outer edge, becoming colored as the scintillating scotoma expands and moves toward the periphery of the involved half of the visual field, eventually disappearing over the horizon of peripheral vision. The entire process lasts 20 to 25 min. This phenomenon is pathognomonic for migraine and has never been described in association
with a cerebral structural anomaly. It is commonly referred to as a fortification spectrum because the serrated edges of the hallucinated "C" seemed to resemble a fortified town with bastions around it; spectrum is used in the sense of an apparition or specter. 2,3

1.2.1 Typical aura with migraine headache
Typical aura consisting of visual and/or sensory and/or speech symptoms. Gradual development, duration no longer than one hour, a mix of positive and negative features and complete reversibility characterize the aura which is associated with a headache fulfilling criteria for 1.1 Migraine without aura. 3

1.2.2 Typical aura with non-migraine headache
Typical aura consisting of visual and/or sensory and/or speech symptoms. Gradual development, duration no longer than one hour, a mix of positive and negative features and complete reversibility characterize the aura which is associated with a headache that does not fulfill criteria for 1.1 Migraine without aura. 3

1.2.3 Typical aura without headache
Typical aura consisting of visual and/or sensory symptoms with or without speech symptoms, gradual development, duration no longer than one hour, a
mix of positive and negative features and complete reversibility characterize
the aura which is not associated with headache.  

1.2.4 Familial hemiplegic migraine (FHM)
Migraine with aura including motor weakness and at least one first or
second-degree relative has migraine aura including motor weakness.  

1.2.5 Sporadic hemiplegic migraine
Migraine with aura including motor weakness but no first- or second-degree
relative has aura including motor weakness.  

1.2.6 Basilar-type migraine
Migraine with aura symptoms clearly originating from the brainstem and/or
from both hemispheres simultaneously affected, but no motor weakness.  

1.3 Childhood periodic syndromes that are commonly precursors of
migraine
1.3.1 Cyclical vomiting
Recurrent episodic attacks, usually stereotypical in the individual patient, of
vomiting and intense nausea. Attacks are associated with pallor and lethargy.
There is complete resolution of symptoms between attacks.  

1.3.2 Abdominal migraine
An idiopathic recurrent disorder seen mainly in children and characterized by episodic midline abdominal pain manifesting in attacks lasting 1-72 hours with normality between episodes. The pain is of moderate to severe intensity and associated with vasomotor symptoms, nausea and vomiting. 3

1.3.3 Benign paroxysmal vertigo of childhood
This probably heterogeneous disorder is characterized by recurrent brief episodic attacks of vertigo occurring without warning and resolving spontaneously in otherwise healthy children. 3

1.4 Retinal migraine
Repeated attacks of monocular visual disturbance, including scintillations, scotomata or blindness, associated with migraine headache. 3

1.5.1 Chronic migraine
Migraine headache occurring on 15 or more days per month for more than 3 months in the absence of medication overuse 3

1.5.2 Status migrainosus
A debilitating migraine attack lasting for more than 72 hours. 3
1.5.3 Persistent aura without infarction

Aura symptoms persist for more than 1 week without radiographic evidence of infarction.²

1.5.5 Migraine-triggered seizure

A seizure triggered by a migraine aura.²

1.6 Probable migraine

Migraine-like headache secondary to another disorder (symptomatic migraine) is coded according to that disorders categorized into three subdivisions.²

1.6.1 Probable migraine without aura²

1.6.2 Probable migraine with aura²

1.6.5 Probable chronic migraine²

This thesis is exclusively based on the commonest division of migraine classification i.e Migraine without aura or common migraine, so in depth discussion is needed about common migraine.

TABLE 9: International Headache Society Criteria:², ³, 16

Migraine without aura
A. At least 5 attacks and fulfilling criteria column B to D.
B. Headache attacks lasting 4-72 hours (untreated or un successfully treated)
C. Headache has at least two of the following characteristics:
1. Unilateral location
2. Pulsating quality
3. Moderate or severe pain intensity
4. Aggravation by or causing avoidance of routine physical activity (eg, walking or climbing stairs)

D. **During headache at least one of the following:**
   1. Nausea and/or vomiting
   2. Photophobia and phonophobia

E. **Not attributed to another disorder**

**TABLE – 10: International Headache Society Criteria: Migraine with Aura**

A. At least 2 attacks that fulfill criteria in B and C

B. At least 3 of the following 4 characteristics:
   1. One or more completely reversible aura symptoms that indicate focal cerebral cortical or brainstem dysfunction (or both)
   2. At least one aura symptom develops gradually over >4 min or two or more symptoms occur in succession
   3. No aura symptom; lasts >60 min
   4. Headache follows aura in <1 hour

C. No evidence of related organic disease.
ROLE OF PSYCHOLOGICAL FACTORS IN RELATION TO MIGRAINE

The world is full of nervous, tense, apprehensive, and worried people. Medical historians have identified comparable periods of pervasive anxiety dating back to the time of Marcus Aurelius and Constantine, when societies were undergoing rapid and profound changes and individuals were assailed by an overwhelming sense of insecurity, personal in significance, and fear of the future. In an audit of one neurologic outpatient department, anxiety and depressive reactions were the main preliminary diagnosis in 20 percent of the patients—second only to the symptom of headache.\(^\text{14}\)

Some degree of nervousness and anxiety is experienced by any person facing a challenging or threatening task for which he may feel unprepared and inadequate. In such cases, anxiety is not abnormal, and the alertness and attentiveness that accompany it may actually improve performance up to a point. In a similar vein, if worry or depression stands in clear relation to serious economic reverses or loss of a loved one, the symptom is usually accepted as normal. Only when it is excessively intense or prolonged or when accompanying visceral derangements are prominent do anxiety and depression become matters of medical concern. Admittedly, the line that separates normal emotional reactions and pathologic ones is not sharp.
Migraine and anxiety disorders are co-morbid, and in some studies, the relationship is even stronger than that between migraine and depression. In the studies reported herein, the OR (Odds Ratio) for migraine and generalized anxiety disorder ranged from 3.5 to 5.3. In addition, most people with depression also have anxiety disorders, but many people with anxiety disorders do not have depression. For this reason, it is important to screen for both depression and anxiety in persons with migraine. Migraine and other severe headaches are also co-morbid with panic disorder, and the data suggest that the temporal relationship is in the headache-to-panic disorder direction, rather than the reverse. The co-existing relationship between migraine, depression, and anxiety disorders can have important clinical implications, depending on the chronology of these conditions. Treatment of one condition could help prevent progression to one or both of the other two.\(^\text{15}\)

There is a connection between a migraine and anxiety: A headache is a physical symptom of anxiety and stress.\(^\text{16}\)

It was in a population study that, compared with controls, migraine sufferers are four to five times more likely to have affective disorders including dysthymia, major depression and bipolar disorder. The same group also found that patients with migraine were three times more likely to develop
depression, and patients with depression were also three times more likely to develop migraine than controls.

The same profile was found between migraine and panic disorder (PD), but patients with severe non-migraine headache did not show the same correlation: Non-migraine headache was predictive of psychiatric disorder, but the reverse was not true.

In a population study examining headache occurrence and prevalence of PD, reported that male participants with PD were seven times more likely than those without the condition to report a migraine headache in the previous week. Furthermore, 9.5% of females and 5.5% of males with PD reported 25% of the total migraine headaches recorded in the one-week recall period.¹⁷

For many years, headache patients were thought to have a certain personality type, called the Migraine Personality. This type of person was described as a thin, white upper class female who was neurotic, anxious and controlling. Researchers noticed the high association of anxiety and depression with migraine. Today we know it is true that 85% of all migraineurs have anxiety and depression. What is really happening is that many headache sufferers have poor coping skills. When confronted with stress they do not know how
to relax, get away or rationalize the stress. Instead they try to control it or become emeshed in the situation. So the key here is basically to learn better coping skills to life stressors. We all have stress but the idea is to learn to handle it better. Get away from the situation that is causing the stress.  

Wacogne et al (2003) found that stress and anxiety were higher in the migraine group than in the control group and above the clinical level. Depression scores remained low in both groups, under clinical relevance.

Stress is a primordial factor in the triggering and perpetuation of migraine attacks. The high score of the items 'morning fatigue', 'intrusive thoughts about work', 'feeling under pressure', 'impatience', and 'irritability' of the stress questionnaire in the migraineurs is particularly significant in the intensive stress response. It seems necessary to manage stress to improve the daily life of migraineurs and to study the link between stress, anxiety and migraine.

Middle-aged women with migraine or nonmigraine headache are at increased risk of incident depression. Frequent migraine attacks (weekly or daily) were associated with the highest risk for developing depression. Much of the apparent association between migraine and depression may be explained by stress.

Lower Pain threshold in interictal migraineurs seem related to increased sleep pressure. It hypothesizes that migraineurs on the average suffer from a
relative sleep deprivation and need more sleep than healthy controls. Lack of adequate rest might be an attack-precipitating- and hyperalgesia-inducing factor. Migraineurs reported more insomnia and other sleep-related symptoms than controls, but the objective sleep differences were smaller and no differences in daytime sleepiness is found.\textsuperscript{25}

**PAIN IN ASSOCIATION WITH PSYCHIATRIC DISEASES**

It is not unusual for patients with endogenous depression to have pain as the predominant symptom; most patients with chronic pain of all types are depressed. Wells and colleagues, in a survey of a large number of depressed and chronic pain patients, have corroborated this clinical impression. Fields has elaborated a theoretical explanation of the overlap of pain and depression. In such cases one is faced with an extremely difficult clinical problem —that of determining whether a depressive state is primary or secondary. Complaints of weakness and fatigue, depression, anxiety, insomnia, nervousness, irritability, palpitations, etc., are woven into the clinical syndrome, attesting to the prominence of psychiatric disorder \textsuperscript{5}

Intractable pain may be the leading symptom of both hysteria and compensation neurosis. Every experienced physician is familiar with the “battle-scarred abdomen” of the woman with hysteria (so-called Briquet disease) who has demanded and yielded to one surgical procedure after
another, losing appendix, ovaries, fallopian tubes, uterus, gallbladder, etc., in
the process (“diagnosis by evisceration”)

Compensation neurosis is often colored by persistent complaints of
headaches, neck pain (whiplash injuries), low back pain, etc. While hyper-
suggestibility and relief of pain by placebos may reinforce the physician’s
belief that there is a prominent factor of hysteria or malingering, such data
are difficult to interpret. 14, 19

Migraine is associated different mood disorders like anxiety, depression,
sleep disturbances.

PAIN-SENSITIVE STRUCTURES OF THE HEAD

Pain usually occurs when peripheral nociceptors are stimulated in response
to tissue injury, visceral distension, or other factors. In such situations, pain
perception is a normal physiologic response mediated by a healthy nervous
system. Pain can also result when pain-sensitive pathways of the peripheral
or central nervous system are damaged or activated inappropriately.

Headache may originate from either or both mechanisms. Relatively few
cranial structures are pain-sensitive: the scalp, middle meningeal artery,
dural sinuses, falx cerebri, and the proximal segments of the large pial
arteries. The ventricular ependyma, choroid plexus, pial veins, and much of
the brain parenchyma are pain-insensitive. Electrical stimulation of the
midbrain in the region of the dorsal raphe has resulted in migraine-like
headaches. Thus, whereas most of the brain is insensitive to electrode probing, a site in the midbrain represents a possible source of headache generation. Sensory stimuli from the head are conveyed to the central nervous system via the trigeminal nerves for structures above the tentorium in the anterior and middle fossae of the skull, and via the first three cervical nerves for those in the posterior fossa and the inferior surface of the tentorium.18

CONVENTIONAL MEDICAL THERAPY IN MIGRAINE

Effective long-term management of patients with migraine is challenging because of the complexity of the condition. Experts suggest several goals for successful treatment of acute attacks of migraine. These include treating attacks rapidly and consistently to avoid headache recurrence, to restore the patient’s ability to function, and to minimize the use of backup and rescue medications.26

A wide range of acute treatments with varying efficacies is currently in use. The Headache Consortium’s review of the evidence on antiemetics, barbiturate hypnotics, ergot alkaloids and derivatives, nonsteroidal anti-inflammatory drugs (NSAIDs), combination analgesics and nonopiate analgesics, opiate analgesics, triptans, and other agents found good evidence of the efficacy of only a few agents in the treatment of acute migraine.27
NONSTEROIDAL ANTI INFLAMMATORY DRUGS (NSAIDS):-

Their demonstrated efficacy and favorable tolerability make NSAIDs a first-line treatment choice for all migraine attacks, including severe attacks that have responded to NSAIDs in the past.

Among the NSAIDs, the most consistent evidence exists for aspirin \(^{28-30}\), ibuprofen \(^{31,32}\), naproxen sodium \(^{33,34}\), tolfenamic acid \(^{28,35}\), and the combination agent acetaminophen plus aspirin plus caffeine for the acute treatment of migraine \(^{36}\). The evidence shows that acetaminophen alone is ineffective \(^{37}\).

Mett et al have demonstrated some clear side effects of some different NSAIDs like GI distress, Dizziness, Hypersensitivity etc. \(^{38}\)

SEROTONIN 1B/1D AGONISTS (TRIPTANS)

There is good evidence for the effectiveness of the oral triptans naratriptan \(^{39,40}\), rizatriptan \(^{41-45}\), sumatriptan \(^{46-52}\), and zolmitriptan \(^{53-55}\). In addition, there is good evidence for the effectiveness of subcutaneous \(^{56-60}\) and intranasal \(^{61}\) sumatriptan, making it an option for patients with nausea and vomiting. Adverse effects of the triptans include chest symptoms, but postmarketing data indicate that true ischemic events are rare. Triptans are contraindicated in patients with risk for heart disease, basilar or hemiplegic migraine, or uncontrolled hypertension. Subcutaneous sumatriptan is associated with a
very rapid onset of action, and oral naratriptan is associated with a slower onset of action.\textsuperscript{62}

Very recently yong et al has described that Triptans is an effective, short-term, prophylactic treatment of choice for Menstrual migraine.\textsuperscript{63}

**ERGOTAMINES**

There is good evidence for the efficacy and safety of intranasal dihydroergotamine (DHE) as monotherapy for acute migraine attacks \textsuperscript{64–68}. Placebo-controlled studies of intravenous DHE did not clearly establish its efficacy in the acute treatment of migraine \textsuperscript{69, 70}. The evidence was inconsistent to support efficacy of ergotamine or ergotamine–caffeine, and the studies documented frequent adverse events.

**OPIOIDS**

It is well recognized that opiates are good analgesics, but there is good evidence only for the efficacy of butorphanol nasal spray. Although opioids are commonly used, surprisingly few studies of opioid use in headache pain document whether overuse and the development of dependence are as frequent as clinically perceived. Until further data are available, these drugs may be better reserved for use when other medications cannot be used, when sedation effects are not a concern, or the risk for abuse has been addressed.\textsuperscript{71,72}
**ß BLOCKERS**

ß blockers with intrinsic sympathomimetic activity (acebutolol, alprenolol, oxprenolol, pindolol) seem to be ineffective for the prevention of migraine. Adverse effects reported most commonly with ß blockers were fatigue, depression, nausea, dizziness, and insomnia. These symptoms appear to be fairly well tolerated and seldom caused premature withdrawal from trials.  

73,75

**ANTIDEPRESSENTS**

Amitriptyline has been more frequently studied than the other antidepressants and is the only one with consistent support for efficacy in migraine prevention. The dosages that were most efficacious in the clinical trials ranged from 30 to 150 mg/d. Drowsiness, weight gain, and anticholinergic symptoms were frequently reported with the tricyclic antidepressants studied.  

76–78.

**ANTICOVULSANTS**

Adverse events with these therapies are not uncommon and include weight gain, hair loss, tremor, and teratogenic potential, such as neural tube defects. These agents may be especially useful in patients with prolonged or atypical migraine aura.  

79,80
CALCIUM CHANNEL BLOCKERS

Adverse events reported with flunarizine include sedation, weight gain, and abdominal pain. Depression and extrapyramidal symptoms can be observed, particularly in elderly persons.81

α-AGONISTS

There is good evidence for the lack of efficacy of the α-agonist clonidine in the prevention of migraine 82. Limited evidence shows moderate efficacy of guanfacine83.

HORMONE THERAPY, MAGNESIUM AND RIVOFLAVIN

There is fair evidence for modest efficacy of these agents in certain circumstances, but more trials need to be done. Most of the existing trials had small sample sizes, had self-referred or special patient samples, or had other methodologic flaws84.

CGRP ANTAGONISTS

There are some promising studies assessing the efficacy of oral calcitonin gene related polypeptide receptor antagonists for the acute treatment for migraine, have shown the similar efficacy to triptans. But here also liver function may play a limiting role in how frequently they have used, as one of the phase IIa trials showed asymptomatic elevation of transaminases85.
So conventional medical therapy is Effective in migraine, but adverse effects are present also.

**EFFECT OF HOMEOPATHY IN MIGRAINE**

Homeopathy is one of very popular alternative medicine modes in India. There is a vast difference between the fundamental concept of disease evolution of the so-called modern medical science (Allopathy) and Homeopathy. Homeopathy deals with the principle of individualization. It treats the man, rather than the disease. Individualization is the integral part of homoeopathic treatment. No two persons are alike in health or in disease. Every individual is characterized by some unique features which serve to denote that a particular individual is different from another individual belonging to the same class of group. Homeopathy treats real whole persons as individuals with natural drugs in tiny potentised doses. Dr. Hahnemann first introduced the concept of individualization in performing cures; according to him unique features that are present in a person serve to the purpose of individualization.

Homeopathy is often advocated as a prophylaxis of migraine and headaches. Brigo and Serpelloni (19991) randomized 60 patients with migraine into groups A and B. In group A, this was a choice of 6 homeopathic remedies which were individually prescribed according to the “like cures like” principle at the (nonmaterial) 30C potency. Group B was given placebos.
The results are significantly in favor of homeopathy for all outcome variables: frequency, severity, duration of pain, and concomitant analgesic consumption. The main weakness of this study is the lack of an accurate patient definition. Furthermore, it is possible that a degree of “de-blinding” inadvertently took place.\textsuperscript{87}

Straumsheim et al.\textsuperscript{(1997)} randomized 73 patients into groups A and B. There were no significant intergroup differences in terms of frequency, intensity, duration of attacks, or analgesic consumption. However, attack frequency was significantly lower in the homeopathic group when assessed by the neurologist.\textsuperscript{88}

Whitmarsh and colleagues (1997)\textsuperscript{11} randomized 63 patients with migraine according to International Headache Society (IHS) criteria in group A or B. During the treatment phase, frequency declined in both groups without a significant intergroup difference. Secondary outcome variables (e.g., analgesic consumption) also showed no significant difference between groups. The interpretation of this trial is hampered by the baseline differences of the primary endpoint. This could have been avoided by stratification.\textsuperscript{89}

Walachand colleagues 1997\textsuperscript{12} randomized 98 patients in group A or B there were no significant intergroup differences in any of the variables. This study
profits from thoughtful design and exemplary statistical planning and evaluation.  

Independent computerized literature searches were carried out in 4 databases. Only randomized, placebo-controlled trials were included. Four such studies were found. Their methodological quality was variable but, on average, satisfactory. One study suggested that homeopathic remedies were effective. The other, methodologically stronger trials did not support this notion. It is concluded that the trial data available to date do not suggest that homeopathy is effective in the prophylaxis of migraine or headache beyond a placebo effect.  

There is insufficient evidence to support or refute the use of homeopathy for tension type headache, cervicogenic headache and migraine headache. The studies reviewed possessed several flaws in design. Given these findings, further research is warranted to better investigate the effectiveness of homeopathic treatment of headaches  

**EFFECT OF YOGA IN MIGRAINE**

Patients love complementary and alternative treatments! Most colleagues spend a significant amount of time discussing the benefit and the risk of these therapies, in recent years; it has been common practice to use complementary and alternative medicine (CAM) in the treatment of
headache, alone and in combination with drugs. Dissatisfaction with conventional treatment is not necessarily the reason for using CAM; alternative health care may be more congruent with values, belief, and philosophical orientation toward health and life.\textsuperscript{92}

Yoga, coupling physical exercise with breathing and relaxation, is a popular alternative form of mind–body therapy. Yoga long has been used to reduce the physical symptoms of chronic pain; meditation and yoga also may help individuals deal with the emotional aspects of chronic pain, reducing anxiety and depression.\textsuperscript{93} Socially disadvantaged adults (prisoners in a jail) and children in a remand home showed significant improvements in their sleep, appetite, and general well-being, as well as a decrease in physiological arousal. The practice of meditation was reported to decrease the degree of substance (marijuana) abuse, by way of strengthening the mental resolve and decreasing the anxiety.\textsuperscript{94} Generally positive results in stress, anxiety, depression,\textsuperscript{95,96} epilepsy,\textsuperscript{97,98} multiple sclerosis,\textsuperscript{99} carpal tunnel syndrome,\textsuperscript{100} musculoskeletal and cardiopulmonary disease,\textsuperscript{101} back pain,\textsuperscript{102} arthritis,\textsuperscript{103-105} and even cancer\textsuperscript{106} suggest that yoga has potential as a therapeutic intervention in a variety of disorders.

Yogic breathing is a unique method for balancing the autonomic nervous system and influencing psychologic and stress-related disorders.\textsuperscript{107}
Very less published studies are present in the biomedical literature that described the evaluation of yoga for migraine treatment, as able to find only one literature, John et al have Describe Effectiveness of yoga therapy in the Treatment of migraine without aura. Yoga was found to have a beneficial effect on various migraine parameters (frequency, intensity, duration of attack, medication score), psychological parameters (anxiety and depression), and the nature of pain. The para-sympathetic system may induce more balanced physiological and psychological state through active yoga postures and deep relaxation techniques. This study provides preliminary evidence that integrated yoga therapy can be an effective treatment for migraine. Additional trials employing objective outcome parameters need to be conducted to confirm our results and to determine the long-term effect of yoga.

There are scopes and essentiality of research in Yoga in the treatment of migraine, as research literatures in the effect of yoga in treatment of migraine are very less.