

Introduction to Sikkim

The Indian state of Sikkim is positioned in the eastern Himalayas in the nation's northeast. One of India's smallest countries is this one. Sikkim is framed to the north and northeast by China's Tibet Autonomous Region, to the southeast by Bhutan, to the south by the Indian state of West Bengal, and to the west by Nepal. In the state's southernmost region, Gangtok serves as the capital.



Sikkim, which is a part of the Eastern Himalayas, is well-known for its biodiversity, which includes Alpine and tropical climates, as well as for being home to Kanchenjunga, the loftiest mountain in India and the third loftiest peak on Earth. Gangtok is the capital and largest megacity in Sikkim. Kanchenjunga National Park is located within the state and spans around 35% of it. Sikkim, a long-established independent political reality, was made an Indian mandate in 1950 and a state in 1975. Despite its bitsy size, Sikkim is veritably important to India politically and strategically because of its position along numerous transnational borders.,740 square long hauls in size(7096 square km). Pop(2011),688. Sikkim is a coliseum with steep mountain walls on three of its sides. There are not numerous lowlands, and the relief varies greatly. The ground rises from an altitude of around 750 bases(225 metres) in the Tista River vale to nearly,200 bases,(600 metres) at Kanchenjunga, India's loftiest peak and the third-loftiest mountain in the world, in a distance of about 50 long hauls(80 km). In the west, the Singalila Range divides Sikkim from Nepal, and in the east, the Dongkya Range forms the border with China's Tibet Autonomous Region. Access to the Chumbi vale in Tibet and, beyond the vale, the Tibetan capital of Lhasa are both made simple by a number of passes that cut through this mountain. Two-thirds of Sikkim is made up of mountains that are always covered in snow, with the Kanchenjunga massif as its centrepiece.

The residents of Sikkim have traditionally viewed the mountain as both a god and the residence of gods. Its hills are said to be home to the legendary Yeti, also known as the Abominable Snowman or Nee-gued in Sikkim. Tent, Kabru, and Pauhunri are three farther noteworthy summits that are all advanced than,000 bases(,000 metres). The Tista River and its feeders, including the Rangit, Lhonak, Talung, and Lachung, have sculpted out expansive denes in the mountains to drain the Sikkim receptacle. The Tista River rises from a glacier in the northeast, close to the Tibetan border, and also descends fleetly, dropping about,700 bases(,800 metres) to Rangpo(Rongphu), on the border with West Bengal, where it has sculpted a couloir through the Darjiling Ridge(,000 –,000 bases(,100 –,400 metres)), before arising onto the Indo-Gangetic Plain. Sikkim has a range of climatic axes, from harsh mountain contexts in the north to nearly tropical conditions in the south. In Gangtok, the coldest month of January sees lows of 30 degrees Fahrenheit(about 0 degrees Celsius), while the warmest month of August has highs of the low 80s(about 28 degrees Celsius). Annual rush ranges from 50 to 200 elevation(,270 to,080 mm) depending on elevation and exposure, with the maturity falling during the southwest thunderstorm months(May through October). Destructive landslides and avalanches constantly affect from the violent rain and snowfall. Sikkim has a lesser than two- fifth timber cover. In tropical forestland located below,000 bases, sal(a type of hardwood), pandanus, triumphs, bamboos, ferns, and orchids are wide(,500 metres). Oak, ensign, maple, groaner, magnolia, alder, birch, rhododendron, fir, hemlock, and improve are the most common trees in temperate forestland, which range in elevation from,000 to,000 bases(,500 to,000 metres). At advanced mound, alpine champaign takes the place of timber. Black bears, brown bears, red pandas, several deer species, blue lamb, gorals(little scapegoat- suchlike brutes), and Tibetan antelope are just a many of the different and abundant beast species set up in Sikkim. There are also barracuda , leopards, and lower pussycats. Pheasants, partridges, quail, eagles, barbets, Himalayan featherbrains, Tibetan black crows, and minivets are some of the raspberry species. The several public premises and wildlife sanctuaries in Sikkim offer a safe haven for the state's varied foliage and creatures. One of the biggest high- elevation conservation zones in India is the Kanchenjunga National Park, which was created in 1977 and is located near to the peak from which it gets its name. roughly three-fourths of Sikkim's population is of Nepalese descent; the maturity of them speak the Gorkhali shoptalk of Nepali and exercise Hinduism. slated lines make up around one fifth of the population(an sanctioned order embracing indigenous peoples who fall outside the predominant Indian social scale). The Bhutia, Lepcha, and Limbu lines, who all speak Tibeto- Burman languages and follow both Mahayana Buddhism and the original Bon religion, are the most well- known of these ethnical groupings. Sikkim has a sizable Muslim population as well as a conspicuous Christian nonage. Sikkim's population

primarily consists of members of the slated gentries(an sanctioned term designating those peoples who traditionally have enthralled a low position within the Indian estate system). The vast maturity of people in Sikkim are pastoral residers who live in dispersed townlets and townlets. The major city in Sikkim is called Gangtok. Singtam, Rangpo, Jorethang, Naya Bazar, Mangan, Gyalshing, and Namchi are a many other notable municipalities. Agriculture makes up the maturity of Sikkim's frugality, employing further than half of the state's labour force. Crops grown in the terraced fields along the vale sides include sludge(sludge), rice, buckwheat, wheat, and barley. also grown are sap, gusto, potatoes, vegetables, fruits, and tea. One of the major cardamom directors in the world is Sikkim. multitudinous growers in Sikkim also keep cattle, gormandizers, lamb, scapegoats, and cravens. While yaks and lamb are punched in the advanced elevations of the north, cattle and buffalo are substantially confined to the tropical sticky zone. Sikkim is a mining region for zinc, lead, and bobby. Also, the state possesses coffers of limestone, coal, and graphite. The mineral coffers of Sikkim are only incompletely used for profitable purposes. The Tista River system in Sikkim has significant hydropower eventuality. Energy is supplied to Gangtok, Rangpo, Singtam, and Mangan by a many significant hydroelectric power installations as well as multitudinous lower bones. Government precedence has continued to be pastoral electrification. Up until the early 1970s, Sikkim only held traditional crafts like embroidery, scroll oil, and wood figure, as well as small cabin businesses that produced handwoven fabrics, carpets, and robes. Since also, a number of small- scale diligence have grown. Most specially, these companies produce small electronic factors, timekeepers, watch jewels, and reused refections(including alcohol). Although not multitudinous, roads are the main means of transportation. multitudinous locales feature ropeways, which are analogous to ski lifts. The closest field, at Baghdogra, and the railhead, at Shiliguri, both in West Bengal, are both around 75 long hauls(120 km) and 70 long hauls(110 km) from the capital megacity of Gangtok, independently. According to Sikkim's constitution, the head of state is a governor who's chosen by India's chairman. The state Council of Ministers, which is headed by a chief minister, supports the governor. A bit of the seats in the unicameral Legislative Assembly(Vidhan Sabha), which is tagged, are given to the combined Lepcha and Bhutia communities. The designee of the lamas, or Tibetan Buddhist religious leaders, is given one Lepcha- Bhutia seat; some seats are also set up for slated estate representatives. The High Court in Gangtok, from which prayers may be brought to the Supreme Court of India, is the loftiest court in the judicial system. Lower courts include sessions courts, which frequently handle civil issues, and quarter courts, which arbitrate on felonious charges. District courts also hear both civil and felonious cases. There are a many sections that make up the state. Original headmen act as interposers between the crowd and the quarter administration within each quarter. Village councils known as

panchayats run the townlets and carry out weal enterprise. Sikkim has a number of hospitals and at least one community health centre per quarter. Primary health centres and subcenters give care to pastoral areas. The state takes part in civil enterprise to combat conditions including blindness and TB. The main health difficulties in Sikkim continue to be hepatitis, different respiratory infections, diarrheal ailments (including cholera), and family planning issues. Sikkim has hundreds of government seminaries that offer free primary and secondary education. still, the state is also home to a sizable number of private seminaries. The Sikkim Manipal University of Health, Medical and Technological lores(1995), located in Gangtok, as well as multitudinous lower sodalities that give degrees in law, engineering, tutoring, religious studies, and other subjects all offer advanced education. Sikkim's artistic life exhibits considerable Tibetan influences, but it also carries characteristics from the several Sikkimi lines and their pre-Buddhist traditions. The two- day Phanglhapsol event in August or September, where masked hop perform in honour of Kanchenjunga, the ruling deity, is the most significant jubilee of the time. One of the largest collections of Tibetan books in the world is set up at the Namgyal Institute of Tibetology(1958), located in Gangtok. The collections of wall showpieces, thang- kas (religious oils mounted on brocade), citation puppets, and other workshop of art are set up in numerous cloisters. Sikkim's history before the 17th century is largely unknown. The word su his, which means "new house" in Limbu, is the source of the state's name. The Naong, Chang, Mon, and other lines may have been assimilated by the Lepcha, who were the first people to live in the area. In the fourteenth century, the Bhutia started migrating to the region from Tibet. Phuntsog Namgyal, the first chogyal (temporal and spiritual king), was a member of the Bhutia ethnical group when the area of Sikkim was innovated in 1642. Till 1975, Sikkim was controlled by the Namgyal family. morning in the middle of the 18th century, Sikkim engaged in a number of territorial conflicts with both Bhutan and Nepal. As a result, Nepal came to control sections of western Sikkim and the southern submontane Tarai region. The largest migration of Nepalese to Sikkim started around this time. In exchange for their backing during the Anglo- Nepalese War(1814 – 16), the British gave Sikkim these regions back in 1816, although by 1817 Sikkim had effectively come a mandate of Britain. In 1835, Sikkim vended the megacity of Darjiling to the British East India Company. Anglo- Sikkimese Treaty of 1861 was the result of incidents between the British and Sikkim that led to the annexation of the submontane homes in 1849 and Sikkim's posterior military defeat. Although the description of sovereignty was left vague, the convention established Sikkim as a kingly state subject to British preeminence, and it granted the British rights to free trade and the construction of roads through Sikkim to Tibet. The border between Sikkim and Tibet was established by an agreement reached in 1890 between the British and the Tibetans. Tibet also conceded the unique bond between Sikkim's monarchy and

British India. After that, a British political officer was hired to help the chogyal manage Sikkim's domestic and transnational affairs, in effect taking over as the state's de facto sovereign .

Sikkim saw the first political party conformations after India gained its independence in 1947. Feudalism's eradication, the installation of a democratically tagged government, and Sikkim's objectification into India were among their objects. The chogyal and his abettors fought all of these requests. still, the chogyal was unfit to stand his ground. With the elimination of non-cultivating rent- collecting coproprietors , the feudal system's main support was destroyed in 1949. Sikkim came an Indian mandate in 1950 as a result of the Indo- Sikkimese Treaty, with India being in charge of Sikkim's defence, external affairs, and strategic dispatches. Increased public participation in politics was another demand of the pact, and five general choices with adult franchise were held between 1952 and 1974 as a result. Two opposing parties combined to come the Sikkim Congress, which won the most recent election. After that, the party started a crusade to win further political freedoms and rights, and the chogyal tried to put an end to it. The chogyal requested that the Indian government take over the operation when effects got out of hand. Sikkim's public assembly ratified an Indian- drafted constitution in 1974. In a special election held in 1975, further than 97 percent of choosers supported Sikkim's union with India. On May 16, 1975, Sikkim was admitted as the 22nd state of India.

Epilepsy

The neurological condition epilepsy is characterised by aberrant brain activity that results in seizures or episodes of strange behaviour, sensations, and occasionally loss of consciousness.



Epilepsy can strike any person. Men and women of different periods, races, and artistic backgrounds can develop epilepsy. colorful signs of seizures can do. During a seizure, some epileptics just gawk blankly for a brief period of time, while others continuously haul their branches or legs. One seizure may not inescapably indicate epilepsy. A opinion of epilepsy generally requires at least two unprovoked seizures that do at least 24 hours piecemeal from one another. For utmost epilepsy cases, treatment with medicines or sometimes surgery can control seizures. While some people need ongoing drug to manage their seizures, others eventually witness a conclusion of their seizures. With time,

some epileptic youths may outgrow their affliction. Epilepsy doesn't always beget seizures. A person must have endured robotic seizures(fits mirgi) doubly or further, each time separated by at least 24 hours, in order to be diagnosed with epilepsy. There shouldn't be any inciting incidents when using unprovoked measures. For case, a case who has a head injury and begins having seizures right down can not be linked as having epilepsy. But only also can you classify it as epilepsy if the seizures continue over an extended period of time. So, only a neurosciences platoon or a good croaker can determine if a case has epilepsy.

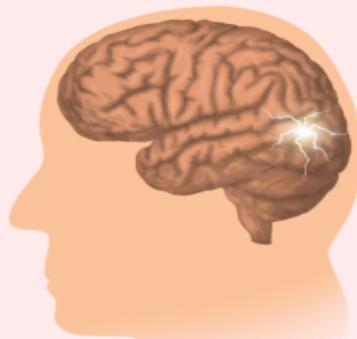
Different types of Epilepsy

Types of Epilepsy

Generalized



Focal



There are two types of epilepsy:

1.) Focal onset seizure: One side of the brain is where a focal onset seizure originates. They were formerly known as partial seizures. The most frequent kind of seizures epileptics have are those with a focal onset. The condensation focal seizure may be used. A focal onset apprehensive seizure is one in which the person has no loss of mindfulness of their surroundings and thresholds in one side of the brain. Simple partial seizures were the former name for this kind of seizure. Anyone can acquire them. They might do more constantly in persons who have endured a brain tumour, stroke, brain infection, or head injury. But constantly, there's no given reason. People who witness focused apprehensive seizures are fully conscious, alert, and suitable to flash back what hopped during the occasion. Some people witness "indurating" during seizures, therefore they may or may not be suitable to respond to others. These seizures are frequently brief, lasting lower than two twinkles. Simple partial(focal onset conscious) seizures have symptoms that are similar to those of other ailments. Focal seizures might be confused with other health issues or symptoms,

such as nausea or discomfort from stomach issues or tingling and numbness from a pinched nerve.

- Psychiatric diseases or the use of specific drugs may be accompanied by visions(smells, tastes, noises, or sights).
- Nearly everyone has sometimes educated certain symptoms(like déjà vu).
- flash ischemic attacks(TIAs), which can be a dangerous warning sign for a unborn stroke, sometimes beget temporary impassiveness or palsy in a branch or the face.
- Visual, chinking, or other symptoms from migraines, with or without a substantial headache, might be incorrect for seizures. The person often continues doing whatever they were doing before to the end of a focal onset conscious seizure.

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2.)Complex Partial Epileptic Seizures: A complex partial seizure is a type of seizure that arises in one lobe of the brain, rather than the whole brain. The seizure affects people's mindfulness and may beget them to lose knowledge. Complex partial seizures are now more generally appertained to as focal onset bloodied mindfulness seizures or focal disabled mindfulness seizures. Anybody can have a complex partial seizure, although people who have endured head injuries, strokes, or excrescences in the brain are more at threat. Common symptoms of complex partial seizures include:

- Air Seizures: These are frequently ante ceded by an air, known as a simple partial seizure. Auras generally last just a many seconds.
- Impaired consciousness: Disabled knowledge People who have a complex partial seizure aren't generally apprehensive of their surroundings while it happens.
- Automatisms: In addition to having an air and having dropped knowledge, numerous cases also have automatisms, which are repetitious conduct. Autohypnosis exemplifications include

Verbal:

- crying
- laughing
- moaning
- repetitive speech
- screaming

Oral:

- chewing
- lip smacking
- swallowing

Manual:

- fumbling
- head rolling
- patting
- picking at things
- removing clothing
- walking
- coordinated movements, such as cycling of the legs or a swimming motion

Symptoms usually last from 30 seconds to 3 minutes.

The duration of complex partial seizures that start in the anterior lobe is generally shorter than those that start in the temporal lobe. The person will feel tired, lost, and puzzled after the seizure. Although these side goods only persist for around 15 twinkles, numerous people witness several hours of incapability to operate typically

How to diagnose Epilepsy?

To rule out implicit surgical explanations for seizures, your neurologist or neurosurgeon will request a many tests. They'll also confirm the opinion by carrying out routine procedures like electro- encephalography(EEG), videotape EEG, and MRI brain reviews, among others.

What Are The Symptoms And Early Signs Of Epilepsy?

Seizures can disrupt any brain- coordinated process since epilepsy is brought on by aberrant brain exertion. The following signs and symptoms of an epileptic seizure may occur:

- The body stiffens for a few seconds to a few minutes.
- The person experiences general and petit mal seizures
- Loss of urine
- Breathing problems.
- Change in face colour to red or blue.
- Constant shaking and jerky movement of the hands and legs.
- Loss of consciousness for a few minutes.
- Feeling blank and numb for a few hours after an epileptic seizure

The type of seizure determines the specific symptoms. The symptoms will be harmonious from occasion to occasion since, in the maturity of situations, a person with epilepsy tends to witness the same kind of seizure every time. According to how and where the aberrant brain exertion starts, croakers generally categorise seizures as either focal or generalised.

What next after diagnosis?

Your neuro adviser will defineanti-epileptic medicines according on the nature of your seizures, and the neurosurgeon will design the operation if the seizures are brought on by a tumour or any other space- enwrapping lesion(similar as vascular deformations). Another group of cases, those with epilepsy since nonage, bear applicable testing and monitoring. These cases' smarts may have a structural abnormality that results in inordinate electrical exertion and seizures. An MRI can identify these locales, and surgery may be an effective way to treat the issue.

What Are The Main Causes Of Epilepsy?

Epilepsy has no identifiable cause in about half the people with the condition. In the other half, the condition may be traced to colourful factors, including:

- **Inheritable influence:** Some forms of epilepsy run in families and are classified by the kind of seizure you have or the area of the brain that's affected. There most likely is a inheritable element in these circumstances. Experimenters have connected colorful forms of epilepsy to particular genes, but for the maturity of people, genes regard for only a portion of the complaint's causes. A person's vulnerability to seizure- converting environmental factors may be increased by specific genes.
- **Head trauma:** Epilepsy may arise after head trauma from a vehicle accident or another traumatic injury.
- Brain abnormalities Epilepsy can be brought on by abnormalities in the brain, similar as brain tumours or vascular anomalies including arteriovenous deformations(AVMs) and cavernous deformations. The major cause of epilepsy in persons over the age of 35 is stroke.
- Infections Epilepsy can be brought on by meningitis, HIV, viral encephalitis, and colorful sponger ails.
- Antenatal injury. Babies are vulnerable to brain injury before birth, which can be brought on by a number of effects, including a mama 's infection, shy aliment, or oxygen privation. Epilepsy or cerebral paralysis may be the result of this brain injury.
- Experimental diseases Experimental conditions like autism and epilepsy can occasionally attend.
- Birth injury, nonage or adolescent accident performing in a head injury
- Meningitis or encephalitis or Any type of habitual brain complaint.
- Overconsumption of alcohol and medicines
- Lack of oxygen during birth
- Brain infections like meningitis or encephalitis
- A inheritable issue that results in epilepsy, similar as tuberous sclerosis

Risk Factors

Certain factors may increase your threat of epilepsy:

- **Age:** Although epilepsy can develop at any age, it most constantly does so in children and aged individualities.
- **Family history:** Family history You may be more likely to develop a seizure problem if you have a family history of epilepsy.
- **Head injuries:** Some cases of epilepsy are caused by head injuries. Wearing a seatbelt in a auto and a helmet while biking, skiing, riding a motorbike, or taking part in other sports that carry a high threat of head injuries will lower your threat.

- **Stroke and other vascular diseases:** Heart complaint and other vascular conditions. Damage to the brain from a stroke or other vascular(blood vessel) condition may affect in epilepsy. Several conduct can be taken to lower your chance of developing these ailments, similar as limiting your alcohol input, quitting smoking, maintaining a healthy diet, and engaging in regular exercise.
- **Dementia:** Dementia can raise the threat of epilepsy..
- **Brain infections:** Infections of the brain Your threat can be raised by ailments like meningitis, which can affect in inflammation of the brain or spinal cord.
- **Seizures in childhood:** Early childhood seizures. Seizures with high fevers in children can occasionally coexist. Most kids who experience seizures because of high fevers won't go on to have epilepsy. If a kid has experienced a prolonged fever-related seizure, has another nervous system disorder, or has a family history of epilepsy, their risk of developing epilepsy rises.

Epilepsy In Children

Epilepsy affects further than,45000 kids under the age of 18 every year.

Pediatric epilepsy is the epilepsy that affects children. They need particular consideration and care for optimal remedy.

According to the Epilepsy Foundation, by the time they reach their teenage times, two- thirds of children with epilepsy stop having seizures. With a well-organized care system, the maturity of kiddies may avoid seizures and minimise adverse effects.

a paediatrician may determine that the child has epilepsy, If a sprat gets further than one seizure that's unconnected to any other condition. The first time of life is when fits are most prone to do. Depending on their age, the type of seizure they have, how well they respond to epilepsy remedy, and any other pre-existing health conditions, different children respond else to epilepsy.

While some children may witness lifelong challenges with seizures, in other circumstances, oral drug can effectively control seizures. Although paediatric epilepsy symptoms differ from sprat to child, some of the typical symptoms

include the following:

- Staring
- Shaking of the arms and legs
- Body stiffening
- Loss of consciousness
- Breathing issues or even stopping breathing
- Loss of urine control
- Falling suddenly for no obvious reason
- Not reacting to noise or words for short periods
- Looking confused or in a haze
- Nodding head rhythmically, when losing awareness or consciousness
- Periods of speedy eye blinking and staring

What are the recent advances in Epilepsy treatment in the world today?

The most recent system of managing epilepsy includes recent advances in surgery as well as other newer ways like Vagal whim-whams stimulation(VNS), Deep brain stimulation(DBS), Stereo encephalography(SEEG), newer pharmacological superintendences, Keto diet plans, yoga and contemplation, and a holistic approach. We must help epilepsy- affected children come independent and tone- sufficient. They ought to be suitable to go to work, maintain their fiscal independence, get wedded, have kiddies, and live regular lives. The maturity of cases are now entirely medicine-free and living fairly normal lives as a result of the good surgical issues.

Epilepsy in Sikkim- current scenario

One of the most current neurological conditions is epilepsy. There are around 10 million epileptics in India, 2.47 to 8 per,000 individualities in pastoral areas and 2. to 7.8 per,000 people in civic areas., 15 – 24 In different regions of India, prevalence ranged from 0.27 to 0.6 per,000 people per time. There are numerous cases with the condition, but just a small number are entering the right treatment. They aren't being rightly diagnosed due to affiliated psychiatric diseases, cognitive impairment, and other factors. Since cases aren't given acceptable care, there's no substantiation that discusses the burden of epilepsy. The general public, particularly in pastoral areas, lacks mindfulness of and acceptance for surgery, which is a hedge to the advancement of epilepsy treatment rules in India. The burden of this terrible complaint on our nation can be greatly reduced with the help of applicable counsel and community backing. It's disheartening to watch how numerous people travel thousands of long hauls to admit epilepsy treatment at colorful installations across our nation, not realising that Sikkim has a tertiary care installation that provides all

of this top-notch supervision. The Department of Neurosciences at Central Referral Hospital, Sikkim Manipal Institute of Medical Sciences, has established a "Epilepsy clinic" in an effort to combat this illness. A descriptive exploration was conducted between January 1, 2009, and June 15, 2017, on children (progressed 1 to 17) who presented to the paediatric neurology clinic of a university sanitarium in Sikkim with unprovoked seizures. Guidelines from the International League Against Epilepsy were used to diagnose, categorise, and treat seizures. 120(15.6) of the 768 kiddies who had tonic seizures had ES. Each ES had a different seizure onset age. There were 47.5 of children with experimental febrile seizures and 28.3 of children with cerebral palsy, independently. Generalized alcohol- clonic seizures alone (GTCSA), West pattern (WS), tonic- limited non-epilepsy with centrotemporal spikes (SLCECTS), non-epileptic absence epilepsy (CAE), Lennox- Gastaut pattern (LGS), other experimental and epileptic encephalopathies (DEE), tonic- limited domestic immature epilepsy (SLFIE), tonic- limited juvenile myoclonic epilepsy (JME), and juvenile myoclonic epilepsy. The overall response to pharmacotherapy and to monotherapy was seen in 72.4(63/87) and 57.5(50/87) of children with known issues (87/120). Pharmacotherapy was effective for all children with GTCSA, SLFIE, inheritable epilepsy with febrile seizure plus (GEFS), CAE, SLCECTS, and JME, and their brain computer tomography reviews were all normal. Progressive myoclonus epilepsy (PME)(100.0), LGS(73.0), WS(52.0), and other DEEs(40) all had high rates of pharmacoresistant seizures. Despite limited individual cofactors, a respectable number(15.6) of unprovoked seizures might be categorised as specific ES. The most typical ES was WS. Other current ESs included LGS, GTCSA, SLCECTS, CAE, and LGS. In general, the pharmacoresponsiveness of GTCSA, SLFIE, CAE, SLCECTS, GEFS, and JME was high. PME, WS, and LGS have a fair quantum of pharmacoresistance. Neuroimaging isn't needed when certain ES are diagnosed electroclinically.

Treatment of epilepsy in Sikkim:

In Sikkim, neurotherapy and ayurvedic drug are two of the most popular and successful ways to treat epilepsy. The following is a description of the two ways:

1.) Neurotherapy: An effective, non-invasive, and medicine-free remedial system, neurofeedback remedy for epileptic seizures is intended to help cases lessen symptoms.

In fact, one of the first conditions to be successfully treated using neurofeedback was epilepsy. also, neurofeedback can help cases with their focus and processing speed.

The Drake Institute has treated thousands of cases over the once 40 times with neurofeedback remedy for conditions like ADHD, autism, anxiety diseases, fear attacks, depression, and more.

Long after the conclusion of treatment, we can still prop cases with symptom relief and enhancement thanks to slice- edge technologies like qEEG brain mapping, neurofeedback, and neuromodulation.

How Does Neurofeedback Work?

The mortal brain is made up of multitudinous connected networks, and for it to serve at its stylish, these networks must be suitable to communicate with one another unchecked. still, if these networks encounter a communication breakdown, cases may witness a number of cognitive povertys, including a lack of attention, a slowness in processing language, and other issues. Cases can" shift" their smarts into a healthy working pattern that lessens symptoms by learning to fix these communication inefficiencies with the aid of neurofeedback remedy. Multiple challenges can be brought on by dysregulated brainwave measures, including impairments with administrative functioning, emotional control, memory, and follow- through. For case, a person who has elevated theta swells while awake could find it grueling to concentrate and finish a task. Neurofeedback aims to change these brainwave patterns in order to achieve a more effective and functionally applicable meter that will enhance focus, organisation, and crucial literacy functions. With the help of neurofeedback, seizures can be treated by" training the brain to de-emphasis measures that induce and spread storms and to emphasise measures that reduce the liability of seizures being." Neurofeedback has been demonstrated to" lower the prevalence and intensity of seizures," and" recent advances employing QEEG to direct neurofeedback training have made it possible to abolish seizures in utmost cases, indeed those with intractable seizures," according to published clinical studies.

Neurotherapy is done in 2 steps:

1.) Brain Mapping

Our neurofeedback system for epilepsy starts with qEEG brain mapping. Our platoon instals 19 detectors around the case's head to record brainwave exertion in order to collude the case's brain. The results are also varied with a database of asymptomatic, same- age individualities from an FDA- registered reference normative database, allowing us to pinpoint the areas or networks of the brain

that may be over or under- actuated, passing abnormal exertion, or having dysfunctional connectivity. We can design personalised remedy protocols that take into account the particular requirements and circumstances of each case thanks to the information collected through brain mapping. Compactly put, brain mapping enables us to pinpoint the exact position of the issue and the most effective course of action.

1.)Neurofeedback

The case can start entering neurofeedback remedy after having their brain counterplotted. Cases can cover their brain exertion in real- time with the help of neurofeedback remedy. In one case, a computer game with a auto going down a trace is created using the case's brain swells. The auto stays in the right lane and an audio tone is actuated when the patient changes their brainwaves into a healthy functioning pattern. After some trouble, cases can learn to produce this effect on their own without the use of neurofeedback. This tone is also actuated every half second to support this operating pattern. After the course of treatment is complete, people may feel more.

2.)Ayurvedic treatment:

Epilepsy is appertained to in Ayurveda as apasmara, while storms or attacks are called akshepaka. It's a habitual illness that constantly requires a long- term care strategy that includes herbal drugs, ayurvedic curatives, and salutary and life variations.

Types of epilepsy in Ayurveda

Ayurveda divides epilepsy into four orders grounded on which dosha is out of balance the most.

- Vataj seizures(substantially brought on by corrupted vata) are shorter-lasting(fairly), increase respiration rate, beget head to be buried from the lips, and produce strange movements of the body.
- Pittaj seizures(substantially brought on by corrupted pitta) are characterised by inordinate perspiration, a unheroic or sanguine tincture to the skin, and unheroic head coming from the mouth. After the seizure, cases feel extremely thirsty and their bodies come heated.
- Kaphaj seizures(substantially brought on by corrupted kapha) persist longer(fairly), beget unheroic head to come out of the mouth, and the case feels heavy after the seizure.
- Sannipatik seizures have a mixed personality since they're brought on by the corruption of all three doshas.

Causative factors

According to Ayurveda, the causes of epilepsy are:

- long-term consumption of unwholesome food and habits by a person with delusional mind
- long term grief, passion and anger
- subconscious fear and hatred
- unethical regimens, celebrations, and recreations
- debilitated mind
- corrupted, out of balance doshas.

Features of epilepsy

- Convulsions with teeth biting
- Dribbling of frothy saliva
- Difficult and laboured breathing
- Roughness of the body
- Discoloration of the body surface
- Involuntary speech or murmuring
- Head retraction to one side
- Constriction of the fingers
- Unstable movements of the limbs.

Ayurvedic management of epilepsy

Ayurvedic operation of epilepsy strengthens the brain and restores the proper function of the nervous system. nutritional sauces with a alcohol effect are specified along with diet and life adaptations that emphasise a light, fluently-digestible diet and low situations of internal strain.

An epilepsy operation plan emphasises

- panchakarma(ayurvedic detox), purgation, emesis and nasal drug(vamana, virechana and nasya)
- cerebral backing/ assurance(ashwasana)
- specific herbal phrasings to strengthen the body and mind
- rejuvenatory remedy(rasayana)

Panchakarma for epilepsy

Ayurvedic detox(panchakarma) works to unclog the channels of mind and body that are blocked due to imbalanced doshas. A acclimatized panchakarma includes includes remedial oil painting massage(abhyanga), brume bath(swedana), remedial purgation(virechana), remedial enemas(vasti), nasal

drug(nasya), and nervous system treatment(shirodhara). Our educated ayurvedic croakers can produce a customised detox program for your epilepsy conditions and symptoms.

Herbs for epilepsy

Herbal tradition under the supervision of an educated Ayurvedic guru is important. These are some of the sauces which a guru may include in your treatment governance:

- *Vacha*-Acorus calamus Linn.
- *Shankhapushpi*-Convolvulus pluricaulis chosis.
- *Yastimadhu*-Glycyrrhiza glabra Linn.
- *Jatamansi*-Nardostachys jatamansi Dc.
- *Tagara*-Valeriana jatamansi Jones.
- *Lashuna*-Garlic-Allium sativa Linn.
- *Amalaki*-Gooseberry-Emblica officinalis
- *Rasna*- Pluchea lanceolata C. B. Clarke.
- *Hingu*-Asafetida-Ferula narthex Boiss.
- *Brahmi*- Bacopa monnieri (Linn.) Pennell.

Dietary and lifestyle management of epilepsy

NO

- Reduce input of sweet, unctuous, adipose and heavy foods; alcohol, fish products, racy food and old(not fresh) food
- Reduce stimulating food and drink similar as coffee, alcoholic potables, and seasonings that produce heat(e.g. chilli, mustard, pepper etc).
- Avoid stress and internal and emotional pressure.
- Avoid poor sleep hygiene(working, studying or using computers and phones late into the night, going to bed late, sleeping late in the day).

YES

- Enjoy ayurvedic rituals like tone oil painting massage, nasya(oil painting drops into the nostrils), neti(yogic sinus sanctification).
- share in awareness and relaxation practices like yoga, contemplation and pranayama as they've positive goods on brain chemistry and support mending.
- Increase foods rich in omega 3 adipose acids and vitamin.
- A ketogenic diet has been shown to be salutary in reducing the number and frequency of seizures. It's characterised by a high- fat, acceptable-protein, low- carbohydrate diet. The diet forces the body to burn fats rather than carbohydrates. typically, the carbohydrates contained in food are converted into glucose, which is also transported around the body and is particularly important in fueling brain- function. still, if there's little carbohydrate in the diet, the liver converts fat into adipose acids and ketone bodies. The ketone bodies pass into the brain and replace glucose as an energy source. An elevated position of ketone bodies in the blood, a state known as ketosis, leads to a reduction in the frequency of epileptic seizures.

Drug Resistant Epilepsy Spectrum in Sikkim

The International League Against Epilepsy (ILAE)²⁷ defines drug resistant epilepsy as the inability to obtain prolonged seizure independence after adequate trials of two tolerated and properly selected and utilised anti-epileptic drug (AED) regimes (either as monotherapies or in combination). Having no seizures for at least three times the longest pre-intervention inter-seizure interval (calculated from seizures that occurred within the previous 12 months) or 12 months, whichever is longer, is referred to as seizure independence. However, treatment failure is characterised as continuing to experience seizures even after

an acceptable amount of the intervention has been used (as defined earlier). Seizure control should be classified as "undetermined" if a patient has been seizure-free for less than 12 months but for three times the pre-intervention inter-seizure interval.

It was unknown how common and severe drug-resistant epilepsy (DRE) was in India. The results of international research differed; one in Thailand found 42%²⁹ drug-resistant epilepsy patients, while another in Spain found 19%²⁸. Patients with DRE and their families were the most affected. They were suffering greatly from unemployment, depression, and a lack of education.³⁰ In order to address DRE patients in Eastern India globally, we decided to conduct the current study.

Methods

A study was carried out in the neurology department of the Nilratan Sircar Medical College and Hospital in Eastern India, which treats patients from Bangladesh and Nepal as well as the Eastern Indian states of West Bengal, Bihar, Jharkhand, Odisha, and Sikkim. They were seen by us at a different intractable epilepsy clinic connected to our department. Along with demographic information, a thorough seizure history was recorded. All patients had electroencephalogram (EEG) procedures. In order to rule out or confirm structural pathology and to categorise each patient into primary/idiopathic and secondary, each patient underwent structural imaging magnetic resonance imaging (MRI) of the brain. When no reason could be found on an MRI scan, patients with idiopathic/primary DRE had normal brain imaging; other cases had abnormal brain imaging. Normal brain imaging on an MRI does not necessarily rule out secondary causes, as many secondary cases can have normal brain imaging. The cause may have been discovered using functional imaging and other sophisticated investigations. Drug compliance was noted along with a thorough treatment history. AED use that was extremely erratic and a pattern of frequent absences were both considered non-compliance. Fisher's exact test statistical analysis was performed using Instant GraphPad (GraphPad Software Inc., CA, USA) and two sided p values were calculated.

Results

About 2153 (9.5%) of the 22,638 patients who visited the Neurology Out-Patient Department (OPD) between January 2014 and December 2015 had epilepsy. In accordance with the ILAE's guidelines, 243 (11.3%) of these epilepsy patients were found to have DRE.²⁷

In the series of 243 DRE patients, it was discovered that men made up 63% of the patient population. The majority of the patients (40%) were seen in their first decade of life, followed by patients in their second and third decades by 30.5% and 18.1%, respectively. In the study, gender bias was also discovered. Men were substantially more affected than females in the 0–5 year age group (18.8% vs. 9%, p = 0.04), whereas in the 6–10 year age group, girls were significantly more affected than males (19.5% vs. 33.7%, p = 0.02). Different patients experienced different kinds of seizures. Some patients experienced only one form of seizure, while others experienced many seizure types. The relationship between seizure type and gender was also investigated. In contrast to women, who were more likely to experience complex partial seizures, men tended to have generalised tonic clonic seizures (GTCS) and myoclonic seizures.

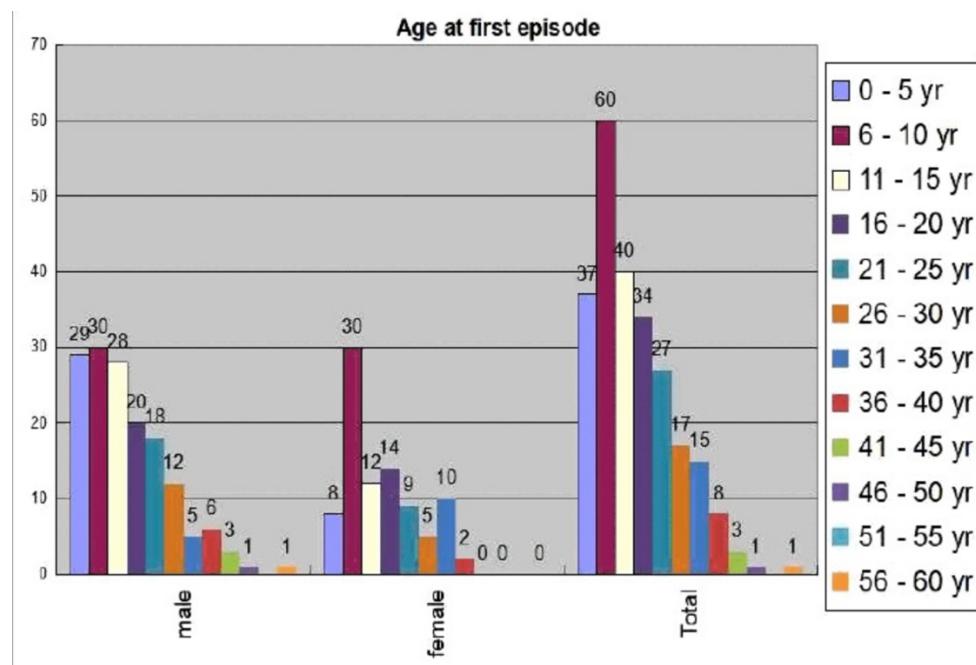


Table 1

Characteristics of DRE patients

Characteristics of drug resistant epilepsy patients	Values
Median age	12.7
Male	63%
Female	37%
Percentage of focal epilepsy	46.1%
Percentage of generalized epilepsy	38.7%
Percentage of multiple seizure type	15.2%
Presence of family history	11.5%
Mean number of AED use	2.36
Medicine compliance	72.4%

DRE, drug resistant epilepsy; AED, anti-epileptic drug.

Table 2

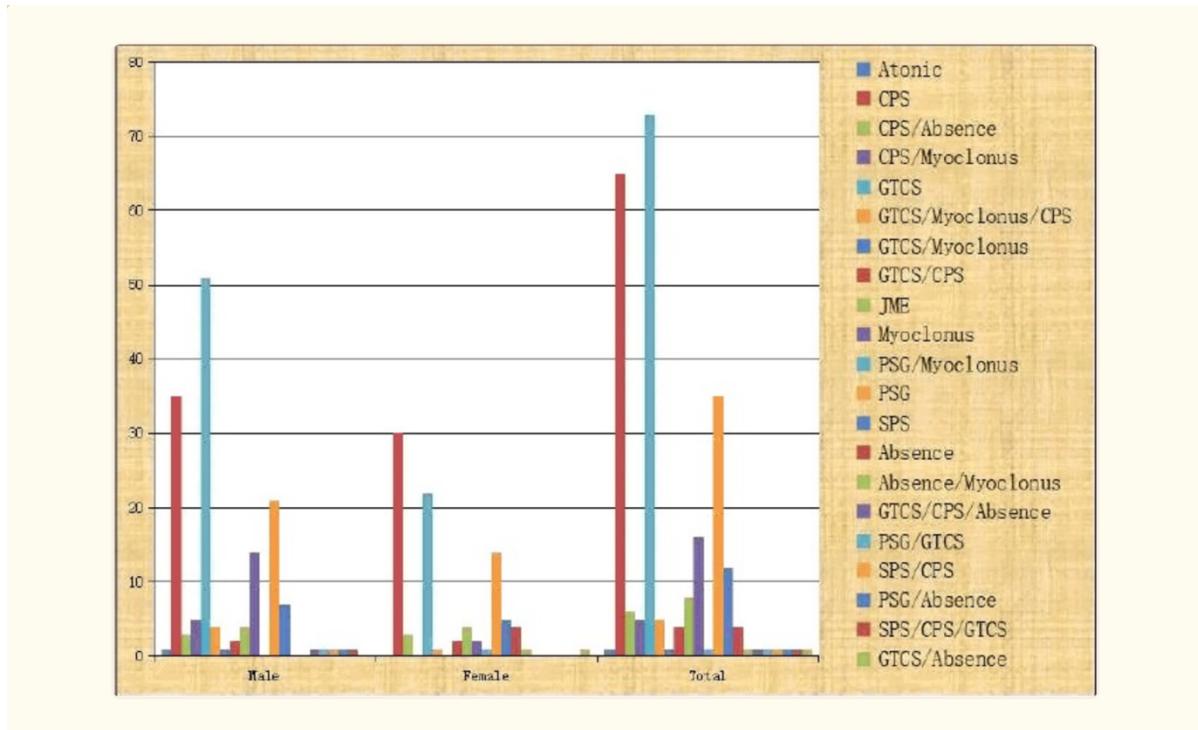
Gender predilection in GTCS, Myoclonus and CPS

	Male	Female	p-value
GTCS alone	51	22	0.06
CPS alone	35	30	
Myoclonus alone	14	2	0.02
CPS alone	35	30	

GTCS, generalized tonic clonic seizure; CPS, complex partial seizure.

A single seizure type affected 129 male and 77 female patients, while 24 male and 13 female patients experienced several seizure types; there was

no discernible gender difference in this group of patients ($p = 0.85$). 11.5% of DRE patients had a family history of seizure disorder, which was higher in patients with partial seizures than generalised seizure patients (16.6% vs. 5.2%, $p = 0.07$), despite the statistically small difference.



The majority of the patients ($n = 168$) had primary/idiopathic resistant epilepsy, which was followed by granulomas ($n = 13$), hypoxic ischemic encephalopathy ($n = 13$), hippocampal sclerosis ($n = 11$), and other conditions. EEG results were diverse in several resistant epilepsy etiologies. The prevalence of normal EEG was highest in cases of primary and hippocampal sclerosis, widespread discharge was highest in situations of gliosis, granuloma, and hypoxic ischemic encephalopathy, and focal discharge was highest in cases of congenital malformation. In contrast to resistant epilepsy cases with normal brain imaging (primary/idiopathic resistant epilepsy cases), it was discovered that a higher percentage of resistant epilepsy cases with abnormal brain imaging (secondary resistant epilepsy cases) had EEG abnormalities (63.4% vs. 58.3%; $p = 0.02$).

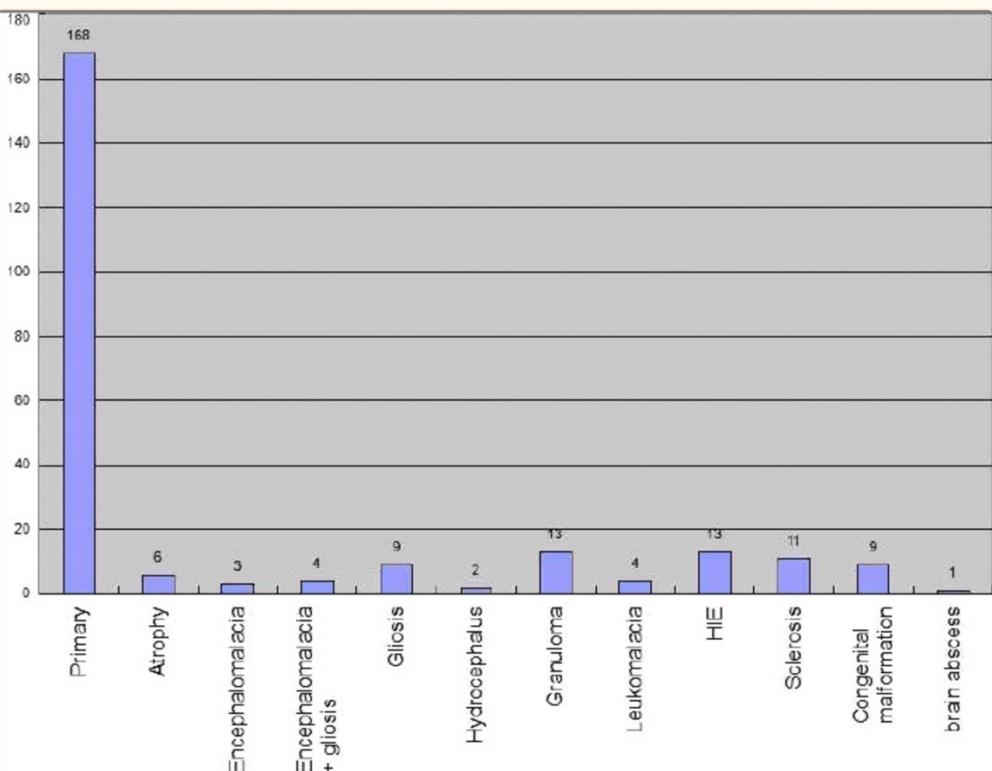


Table 3

Spectrum of various EEG findings in different etiology of DRE patients

EEG Findings	Primary (n = 168)	Granuloma (n = 13)	Hypoxic Ischemic Encephalopathy (n = 13)	Hippocampal Sclerosis (n = 11)	Gliosis (n = 9)	Congenital malformation (n = 9)
Normal	42	46	24	82	33	22
Generalized discharge	39	54	46	18	67	22
Focal discharge	8	0	15	0	0	56
Focal with secondary generalization	11	0	15	0	0	0

Depending on the type of epilepsy, phenytoin, sodium valproate, carbamazepine, or phenobarbitone were used as the first AED. Regarding the second medicine of choice, it was discovered that the most common dosage (18.1%) was carbamazepine, which was closely followed by clobazam and levetiracetam (16.2% each). 18 (7.4%) patients were using four AEDs at the time of data collection, compared to 85 (35%) patients using three, 107 (44%) patients using two, and 33 (13.6%) patients using just one. There were at least

two medicines being taken by 210 patients. In comparison to men (23.5%), women (34.4%) had considerably greater rates of non-compliance with medication ($p < 0.0001$).

Table 4

Comparison of different EEG discharges between patients with and without structural brain lesions

EEG Findings	Cases without structural brain lesion (primary) (n=168)	Cases with structural brain lesion (secondary) (n=75)
Normal	41.7	36.6
Generalized discharge	38.9	46.3
Focal discharge	8.3	12.2
Focal with secondary generalization	11.1	4.9

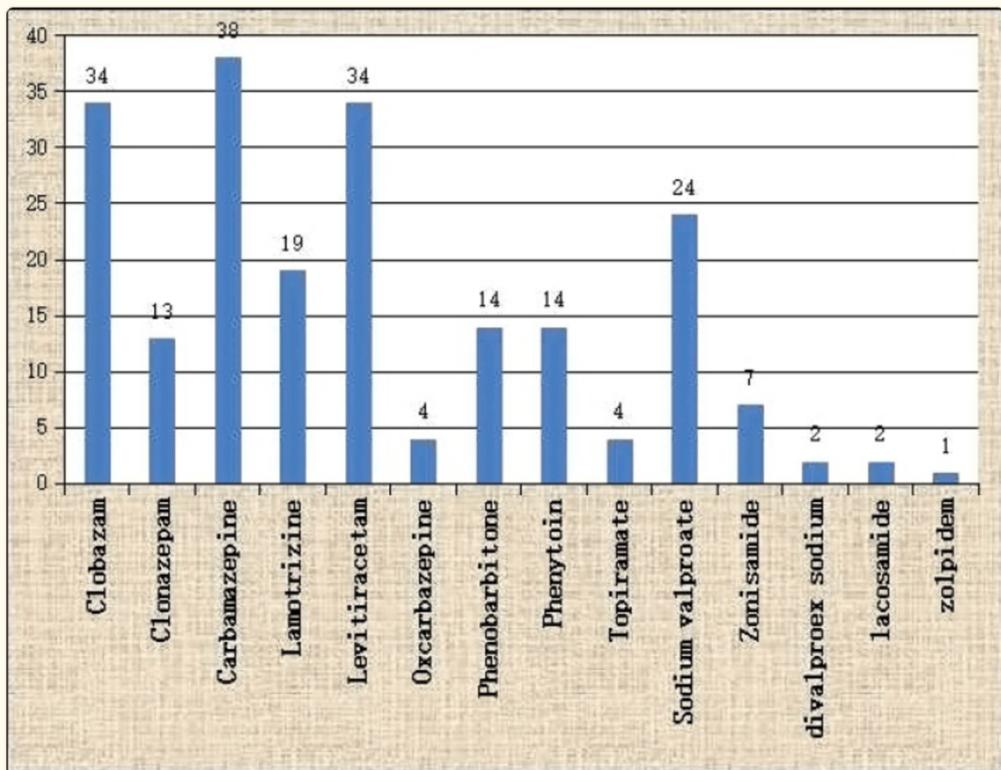


Figure 4

Pattern of first add-on drug in drug resistant epilepsy (DRE) patients.

Conclusions of DRE

The spectrum indicated a gender preference for particular age groups as well as seizure kinds. The majority of cases in DRE were idiopathic, indicating the need for fresher research. Even a patient with DRE could have a normal EEG. Inconsistency was more prevalent in women.