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## The pharmacology and pharmacotherapeutic approach of various neurological disorders

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### Abstract

Medical definitions of neurological illnesses include conditions that impact not only the brain but also the spinal cord and nerves located all over the human body. Some of the neurological disorders listed out here. Pain in the head region is defined as a headache. Migraine, tension, and cluster are three common types of headaches. Transient disruptions in the electrical activity of the brain are defined as seizures and repeated seizures are called epilepsy. Focal seizures and generalized seizures are two different forms, and the differences include how they begin. A stroke is a cerebrovascular disease, also known as a brain attack, which occurs when something obstructs blood flow to a portion of the brain. Parkinson's disease is a degenerative condition resulting in the loss of dopaminergic neurons in the substantia nigra of the brain. The presence of neurofibrillary tangles and plaques in the brain causes Alzheimer's disease, which is the leading cause of dementia. Sleep disorders are conditions that interfere with your capacity to receive enough high-quality sleep and include several conditions, among which insomnia and sleep apnea are common. Amyotrophic lateral sclerosis is a neuromuscular condition characterized by muscle weakness. Schizophrenia is a psychiatric disorder characterized by delusions (false beliefs), unusual behavior, and withdrawal from people in addition to muscular dystrophy and multiple sclerosis (MS).

**Keywords:** CNS, Disorders, CV disorders, parkinson's, migraine, drug therapy

### Introduction

Illnesses of the central and peripheral nervous systems are also known as nervous system diseases. Neurological problems affect hundreds of millions of individuals globally. The word "neurological" is derived from neurology, the area of medicine that addresses issues involving the nervous system. The word "neuro" refers to the neurological system or nerves. (1, 26). Numerous bacterial, viral, fungal, parasite, and fungi infections-including Mycobacterial TB, Neisseria meningitides, Human Immunodeficiency Virus (HIV), enter viruses, Aspergillus, malaria, and Zika-can have an impact on the nervous system (1). The brain and spinal cord make up the central nervous system, whereas the nerves that emerge from these structures and travel to various parts of the body make up the peripheral nervous system. Numerous body functions are controlled by the neurological system. Many vital bodily processes, including memory, perception, language, movement, swallowing, breathing, and even bowel and bladder function, are controlled by them. Over 600 neurological disorders are recognized. Degenerative disorders include muscular dystrophy and motor neuron disease (MND). The brain, spinal cord, cranial nerves, peripheral nerves, nerve roots, autonomic nervous system, neuromuscular junction, and muscles are all included in this. Non-communicable neurological conditions include epilepsy, Parkinson's disease, multiple sclerosis, Alzheimer's disease and other dementias, migraines, non-migraine headaches, and multiple sclerosis. Here describing about various neurological disorders and affected areas in the brain and spinal cord [1-3].

S. No	Neurological Disorders
1	Headaches
2	Seizures and epilepsy
3	Stroke
4	Parkinsons disease
5	Alzheimer's disease and dementia
6	Sleep-disorders
7	Schizophrenia
8	Amyotrophic lateral sclerosis (ALS)
9	Muscular dystrophy
10	Multiple sclerosis

## Neurological Disorders

### A. Headache

An ache or discomfort in the head or face is known as a headache. In terms of the location, nature, and frequency of their occurrence, headaches vary widely [4].

#### There are two types of headaches

1. Primary headache.
2. Secondary headache.

Different types of headaches	
S. No	Types
A.	Migraine
B.	Tension Headaches
C.	Cluster Headaches

#### A) Migraine

- The typical frequency of episodic attacks is once or twice a month however this can vary greatly depending

**Table 1:** Different Types of Seizures.

S. No	Type	Sub-Types
1.	Partial seizures	A. Simple Partial Seizure
		B. Complex Partial Seizure
		C. Partial Seizures with secondary generalization.
2.	Primarily generalized seizure	A. Generalized tonic-clonic seizure
		B. Tonic seizure
		C. Atonic seizure
		D. Myoclonic seizure
		E. Absence seizure
3.	Unclassified seizures	A. Neonatal seizure
		B. Infantile spasms

#### Seizures are classified into two groups

- Generalized seizures.
- Focal seizures or partial seizures.

#### The distinction between these categories is seen in how they begin

- Generalized seizures: A vast electrical discharge that simultaneously affects both sides of the brain.
- Focal seizures: An electrical discharge in a specific region of the brain marks the start of partial seizures.

#### 1. Generalized Seizures

- Seizures that develop on both sides of the brain are referred to as generalized seizures.
- It includes absence seizures and tonic-clonic seizures.

#### A. Absence seizures

- The entire brain is characterized by epileptic activity. This kind of seizure is characterized by a brief (often under 15 seconds) disruption of brain activity brought on by unusual electrical activity in the brain.

on lifestyle and environmental circumstances. Since menstruation is hormonally linked to prevalence, it is higher in women.

- The characteristics of an attack that stand out the most include headache, nausea, and photophobia.

#### The four migraine phases are as follows

1. Premonition or prodromal phase.
2. Aura phase.
3. Headache phase.
4. Resolution phase.

#### B) Tension headaches

- Tension headaches are the most typical type of headache and are brought on by tense muscles in the shoulders, neck, jaw, and scalp [4].
- These headaches are frequently caused by stress and tightening of the muscles.

#### C) Cluster headaches

- The majority of the time, cluster headaches comes in waves that can last weeks or months.
- The main sign of a cluster headache is severe pain on one side of the head, typically behind one eye [4].

#### B. Epileptic Seizures

A seizure is typically described as an abrupt shift in behaviour brought on by a transient disruption in the electrical activity of the brain. A brain illness called epilepsy is characterized by recurrent seizures.

- Over activity starts and stops suddenly and without warning. There is a period of unconsciousness followed by a vacant stare. It could appear as though the person is daydreaming and doesn't remember it [5-6].
- It is a milder kind that most frequently affects those under the age of 20, mainly children between the ages of 4 and 12.

#### B. Tonic-clonic seizures:

##### These seizures can cause someone to become-

- Shout with pain.
- Become unconscious.
- Drop to the floor.
- Have jerks or spasms in your muscles.

After a tonic-clonic seizure, the person could feel exhausted.

#### 2. Focal Seizures

Focal seizures are located in just one area of the brain. Partial seizures are another name for these episodes.

**It includes**

S. No	Type	Description
A.	Simple Focal Seizures	A tiny area of the brain is affected by simple focal seizures. Twitching or a change in sensation, such as an odd taste or smell, may be brought on by these seizures.
B.	Complex Focal Seizures	A person with epilepsy may become confused or disoriented following complex focal seizures. For up to a few minutes, the person won't be able to answer inquiries or follow instructions.
C.	Secondary Generalized Seizures	Secondary generalized seizures start in one area of the brain and eventually affect both sides. To put it another way, the person experiences a focal seizure first, then a generalized seizure.

**C. Stroke**

- Stroke also known as brain attack, is a cerebrovascular disease that occurs when something obstructs blood flow to a portion of the brain or when a blood vessel in the brain breaks.
- The damaged area's brain cells lack the essential oxygen and nutrients they require to operate and survive without adequate blood flow.
- The likelihood of having a stroke depends on several risk factors, some of which are controllable (physical inactivity, obesity, hypertension, diabetes, smoking, excessive alcohol use), and others of which are not (age, sex, heredity).

**The three distinct types of strokes**

S. No	Stroke Type
A.	Ischemic Stroke
B.	Hemorrhagic Stroke,
C.	Transient Ischemic Attack (Tia).

**A. Ischemic Stroke**

- It is the most prevalent kind of stroke, and it occurs when the arteries surrounding the brain become blocked.
- Ischemic strokes can start in several locations on the body and can be brought on by a wide range of obstructions.
- Embolic stroke:** An embolic stroke happens when a blood clot, plaque fragment, or other material originates in another area of the body and moves to the blood vessels in the brain.
- Thrombotic stroke:** A thrombus or a blood clot develops inside a brain blood vessel to cause a thrombotic stroke.

**B. Hemorrhagic Stroke**

- When blood from an artery suddenly starts bleeding into the brain, it results in a hemorrhagic stroke.
- As a result, the portion of the body that the damaged section of the brain controls cannot function normally.
- Life-threatening complications and more extensive brain injury may be avoided with quick medical care.

**Hemorrhagic stroke can occur in two major ways**

- Intracranial haemorrhage:** When there is bleeding inside the brain.
- Subarachnoid haemorrhage:** This happens when there is bleeding between the membranes that cover the brain and the brain itself [7-10].

**Causes of hemorrhagic strokes**

A hemorrhagic stroke is most frequently caused by hypertension or high blood pressure.

The following are additional ailments or causes of hemorrhagic strokes:

- Aneurysms in the brain (abnormal bulging of blood vessel walls when they are weaker than usual)
- Brain tumors and cancer that has spread to the brain
- Blood-thinning drugs (which might worsen or induce brain hemorrhage).
- Head trauma.
- Stroke that was ischemic and had subsequent hemorrhage
- Other disorders that affect your brain's blood vessels (like cerebral amyloid angiopathy and moyamoya disease) [11-12].

**C. Transient Ischemic Attack**

- A TIA, also known as a transient ischemic attack, is a medical emergency. It is described as a neurologic malfunction brought on by a transient stoppage of blood flow to the brain.
- The symptoms typically last less than five minutes, and the clot normally breaks down on its own or becomes dislodged.
- A TIA is a "warning stroke", indicating a potential full-blown stroke ahead, even though it doesn't result in long-term damage. After a transient ischemic attack, the risk is greatest during the first 48 hours.
- To reduce the risk of more strokes, TIA evaluation should be done as soon as possible with imaging and laboratory tests [13].

**D. Parkinson's Disease**

Parkinson's disease is a degenerative condition of the nervous system that mostly impairs coordination. The accumulation of Lewy bodies and the death and loss of dopaminergic neurons in the substantianigra of the thalamus are the causes of Parkinson's disease (PD). Tremor at rest that subsides with voluntary movement, rigidity, bradykinesia, hypokinesia, and akinesia are all signs of PD [14].

- Age, genetics, gender, and exposure to chemicals are all risk factors for Parkinson's disease. Parkinson's disease stages: Stages 1 through 5 are: 1, 2, 3, 4, and 5.

Stage 1 → Stage 2 → Stage 3 → Stage 4 → Stage 5

Stages of Parkinson's Disease (PD)				
Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Mild symptoms	Mild symptoms	Moderate symptoms	Severe symptoms	Severe symptoms
Symptoms on one side of the body only: <ul style="list-style-type: none"> <li>Tremors.</li> <li>Change in the posture</li> <li>Facial expression</li> <li>Slowness of walking.</li> </ul>	Symptoms on both sides of the body <ul style="list-style-type: none"> <li>Tremors</li> <li>Rigidity</li> <li>Bradykinesia</li> <li>Walking difficulties</li> <li>Postural instability</li> <li>Loss of facial expressions.</li> </ul>	<ul style="list-style-type: none"> <li>Loss of balance</li> <li>Slowness of movements</li> <li>Falls are more common.</li> </ul>	<ul style="list-style-type: none"> <li>Unable to stand without assistance</li> <li>Posture instability</li> <li>Bradykinesia</li> <li>Rigidity</li> </ul>	<ul style="list-style-type: none"> <li>Stiffness in the legs may make it impossible to stand or walk.</li> <li>Hallucinations and delusions occur.</li> </ul>

**Table 2:** Shows various symptoms present at different stages of PD

S. No	Symptoms observed
Stage 1	Mild symptoms that do not significantly impact daily living. Only one side of the body experiences tremors and other motions.
Stage 2	The condition worsens. The two sides of the body are both affected by tremors, stiffness, and other movement disorders. Walking difficulties, bad posture, and balance problems can be growing worse. Daily chores become increasingly challenging.
Stage 3	Mid-stage development when apparent loss of balance occurs. Motor symptoms deteriorate. They are nonetheless largely independent.
Stage 4	The person might be able to stand up and walk on their own, but they could need a walker or cane to navigate around securely. The individual can no longer live alone.
Stage 5	Extremely disabling symptoms. Standing or walking could be impossible due to stiffness. The person may be bedridden or use a wheelchair to move around. For all activities, ongoing care and monitoring are required [15].

**E. Alzheimer's Disease And Dementia**

**Dementia**

- Dementia refers to a set of symptoms associated with a deterioration in memory, reasoning, or other cognitive abilities.
- It is brought on by damage to brain cells, which interferes with their communication, which in turn impairs thinking, behavior, and emotions.
- Alzheimer's disease is the leading cause of dementia [16].

**Alzheimer's disease:** Alzheimer's is a degenerative brain disease characterized by complex brain alterations that occur as a result of cell destruction. It causes dementia symptoms, which progressively get worse over time.

**Causes:** The disease's underlying causes are not fully understood by scientists. According to the national institute on aging, the following are frequently hypothesized causes:

- Age and familial background.
- Specific genes.

- Brain protein (abnormal) deposits.
- Additional risks and environmental factors.
- Autoimmune disorders.

**Symptoms and signs**

- One of the initial indications is frequent memory issues.
- Mild cognitive impairment (mci) is a condition that affects some persons who have memory issues. Additionally connected to mci are issues with movement and olfactory perception.

**Stages of Alzheimer's disease**

Alzheimer's disease has three stages

Stages of Alzheimer's	
	Preliminary phase
Stage 1	Mild Alzheimer's disease
Stage 2	Middle or moderate-stage
Stage 3	Severe or Late-stage

**Table 3:** Different stages of AD

Different stages of AD			
Stage	Duration	Description	Symptoms
Mild Cognitive Impairment	7 Years	The disease begins in the medial temporal lobe	Short-Term Memory Loss
Mild Alzheimer's	2 Years	The disease spreads to lateral temporal & parietal lobes	Reading Problems Poor Object Recognition Poor Direction Sense
Moderate Alzheimer's	2 Years	Disease spreads to the frontal lobe duration	Poor Judgment Impulsivity Short Attention
Severe Alzheimer's	3 Years	The disease spreads to the occipital lobe	Visual Problems

**Preliminary phase**

Changes in the brain take place years before a person exhibits any symptoms of the disease. Preclinical Alzheimer's disease defines this period, which can persist for years.

**Stage 1:** Mild Alzheimer's disease

- Patients are frequently diagnosed at this point.

- As the illness develops, people experience more memory loss and other cognitive impairments. Wandering, difficulty paying bills, asking questions more than once, and taking longer to do typical everyday duties are all examples.

**Stage 2:** Middle or moderate stage.

The parts of the brain responsible for reasoning, language, conscious thought, and sensory processing suffer damage.



**Symptoms at this point include**

- Issues with learning new stuff
- They struggle to recall their names,
- issues with writing, reading, and using numbers

**As the illness worsens, the person might**

- Need assistance with outfit selection, getting dressed, or simple daily tasks like brushing your teeth
- Develop personality changes including hallucinations, paranoia, or delusions, or become moody or reclusive.
- Be upset, disturbed, worried, or tearful, especially late in the day or at night.

**Stage 3: Severe or Late stage**

Plaques and tangles eventually cover the entire brain, and the brain's tissue begins to dramatically diminish.

**At this point, an individual**

- Basic physical capacities, such as eating, sitting, and walking, are lost.
- can lose control of bowel and bladder
- Possibly able to communicate in short bursts but not in conversation.

- Always needs assistance with all tasks <sup>[17-20]</sup>.

**F. Sleep disorders**

- Sleep is quite vital. Lack of sleep can hurt one's ability to learn and perform at work, as well as on one's interpersonal relationships, health, and safety. Sleep disorders, often known as sleep-wake disorders, are problems with the type, amount, and timing of sleep that leads to impairment in functioning and discomfort during the day.
- These illnesses interfere with your capacity to obtain adequate, high-quality sleep. Problems coordinating sleep and waking sometimes arise in connection with physical illnesses or other mental health conditions such as anxiety, depression, or cognitive impairments.
- Sleep disorders are conditions that interfere with your capacity to receive enough high-quality sleep and also raise your risk of developing additional health issues and impair your ability to drive safely <sup>[21]</sup>.
- The most common type is insomnia; obstructive sleep apnea, narcolepsy, parasomnias, restless legs syndrome, are other sleep-wake disorders.

**Table 4:** Various symptoms seen during sleep disorders.

Symptoms of sleep disorders	
1. Difficulty falling asleep	2. Haphazard sleeping patterns
3. Increased movement during sleep	4. Short sleep duration
5. Excessive daytime sleepiness	6. Making frequent errors
7. Daytime tiredness	8. Irregular breathing patterns
9. Fatigue and dizziness	10. Experiencing headaches
10. Experiencing irritability	12. Mental disorders
13. Slow responses during social interactions	

**A. Insomnia**

A sleep disorder called insomnia is illustrated by trouble getting to sleep and/or remaining asleep. (30). A person with insomnia is unable to fall asleep or stay asleep. Another way it could manifest is as an early morning wakeup. Being sleep deprived, commonly known as "sleep deprivation", "sleeplessness", or "sleep inefficiency", refers to not obtaining enough sleep.

**B. Sleep apnea**

People who have sleep apnoea are known to occasionally gasp or make "snorting" noises, which causes their sleep to be briefly disrupted. Excessive daytime sleepiness is another symptom of sleep apnoea. Serious health risks might arise from breathing irregularities or airway blockages as you sleep.

**C. Circadian rhythm sleep disorders**

Everybody has an inbuilt biological clock that controls their 24-hour cycle of sleep and wakefulness. Your circadian cycles could have been messed off, forcing you to feel sleepy, drowsy, and sluggish at inappropriate times.

**D. Narcolepsy**

- A neurological condition called narcolepsy interferes with the regulation of wakefulness and sleep.
- Individuals who have this persistent hereditary illness may go through.

Extreme diurnal drowsiness, hallucinations reminiscent of dreams during sleep or wakefulness, momentary wasting of the muscles.

**E. Shift Work**

Shift work disorder can be brought on by an unconventional work schedule that includes shifts that occur at night.

**F. Obstructive sleep apnea**

- This happens when your upper airway is blocked by the soft tissues in your throat, briefly depriving you of oxygen. You take a breath and wake awake. The primary symptom of the disease, daytime sleepiness, can result from hundreds of these little awakenings.
- Dyssomnia can cause sleeping difficulty hence considered a sleep disorder. Obstructive sleep apnoea is arguably the most well-known kind of dyssomnia <sup>[22]</sup>.

**G. Schizophrenia**

- Schizophrenia is a significant mental disorder that affects a person's ability to think, control their emotions, make decisions, and regulate their thoughts, feelings, and behaviors.
- It's a chronic, multifaceted medical condition that can start in early adulthood.
- Schizophrenia affects around 1 in 100 individuals and its patients experience both "positive" and "negative" symptoms.
- A collection of severe mental illnesses known as schizophrenia is characterized by similar symptoms

such as delusions, reduced emotions, abnormal thinking, and disassociation from reality. Schizophrenia patients exhibit a wide range of symptoms.

- According to a recent study, environmental factors may potentially influence the consequences of genetic risk factors for schizophrenia. Maternal infections, stress, and malnutrition are examples of prenatal and perinatal variables that have been associated with an increased risk of schizophrenia. There is additional evidence linking childhood trauma, such as physical and sexual abuse, to a higher chance of schizophrenia.

- Schizophrenia is known to be characterized by deregulation of dopamine neurotransmission; however, current research has linked changes in the glutamate and GABA neurotransmitter systems to this disorder. Schizophrenia pathogenesis has also been linked to abnormalities in immunological function and oxidative stress [23-24].

**Signs and symptoms**

Cognitive symptoms and both "positive" and "negative" psychotic symptoms are present in schizophrenia.

Different Symptoms in Schizophrenic Patients			
S. No	Categories	Symptoms	Description
1.	Positive symptoms	a. Hallucinations	↑ Dopamine.
		b. Delusions	
		c. Disorganized thought or speech	
		d. Unusual behavior	
2.	Negative symptoms	a. Reduced motivation	↓ Dopamine
		b. Lack of enjoyment	
		c. Social withdrawal	
		d. Flattened emotions	
3.	Cognitive symptoms	a. Memory and attention deficits	

Positive symptoms are those that interfere with a person's ability to operate normally. Hallucinations, delusions, and disordered speech are examples of positive symptoms that are added to a person's typical experience range.

- **Hallucinations:** These include the perception of sounds, visions, or smells that are invisible to others. For the individual experiencing the hallucination, it is incredibly real.
- **Delusions:** These are incorrect beliefs that remain unchanged from the ideas offered to the believer.
- Delusions are frequently accompanied by:
  - A. trouble focusing,
  - B. disorganized thinking, or
  - C. A feeling that their thoughts are obstructed.

Negative symptoms include a loss or reduction in normal functioning. Apathy, social disengagement, and a lack of enthusiasm or enjoyment from activities are examples of negative symptoms.

- A person's abilities are diminished by negative symptoms. Being emotionally flat or speaking inanely is a common negative sign.
- Negative symptoms can make it difficult for a person to initiate or maintain relationships. Sometimes, negative symptoms are mistaken for clinical depression. Cognitive symptoms are problems with concentration, memory, and decision-making. Having trouble focusing, paying attention, and remembering things are examples of cognitive symptoms.

**The Pharmacological Therapy**

**1. Anti-Convulsants**

- Levetiracetam, topiramate, lamotrigine, oxcarbazepine, and divalproex sodium are among the most often prescribed neurology drugs that are anticonvulsants.
- The adverse effects of more recent anticonvulsants, such as pregabalin and gabapentin, are lower. They are used to treat nerve pain, including post herpetic neuralgia and diabetic neuropathy.

**Some common drugs, along with their doses**

S. No	Drug	Dose
1.	Levetiracetam	15-60 mg/kg/day
2.	Topiramate	2-10 mg/kg/day
3.	LamotrIgine	5-10 mg/kg/day
		1-5 mg/kg/day with valproic acid.

**2. Parkinson's disease**

- **Levodopa** and **carbadopa**, two medications used to treat Parkinson's disease, raise the brain's dopamine levels.
- Dopamine agonists such as pramipexole, ropinirole, and rotigotine are among the other neurological drugs used to treat symptoms of Parkinson's disease, such as muscle stiffness.

S. No	Medication	Available doses	Initial dosing
1.	Carbidopa/levodopa	10/100 mg	25/100 mg two to three times per day.
		25/100 mg	
		50/250 mg	
2.	Carbidopa/levodopa (controlled-release)	50/250 mg	50/250 mg twice daily.

**3. Antidepressants**

Addiction, anxiety, chronic pain, and major depressive disorders are all treated with prescription antidepressants.

**4. Antipsychotics**

Antipsychotics, commonly referred to as neuroleptics, are psychotropic drugs that are used to treat psychosis, mostly in schizophrenia but also in several other psychotic diseases.

**Some common drugs in each category**

1. Selective serotonin reuptake inhibitors (SSRI): citalopram, escitalopram, fluoxetine, paroxetine, sertraline, fluvoxamine, and vilazodone.
2. Serotonin and norepinephrine reuptake inhibitors (SNRI): Venlafaxine, duloxetine, and desvenlafaxine
3. Tricyclic antidepressants (TCA): amitriptyline, imipramine, nortriptyline.

**Other categories include**

- Monoamine-Oxidase Inhibitors (MAOI): Phenelzine, tranylcypromine.
- Benzodiazepines: Alprazolam, clonazepam, diazepam, and lorazepam.
- Less typical antidepressants: Trazodone, mirtazapine.
- Supplements used for depression: Omega-3 fatty acids etc.

**The Neurological Rehab Program.**

**AIM:** Regaining the maximum amount of independence and function while enhancing your physical, emotional, and social well-being is the aim of neurological rehabilitation. Depending on your particular condition, a neurological rehab program is tailored to your needs. Your family's participation is essential to the program's success.

**Non Pharmacological Therapies****Acupuncture**

1. Simple, inexpensive, and safe treatment.
2. Improves neurological and motor function recovery.

**Exoskeleton**

1. Used for the rehabilitation of patients with SCI (spinal cord injury).
2. Reduces spasticity and enhances bowel movement.
3. Improves the physical aspects, including body composition and bone health condition.

**Transcutaneous electrical nerve stimulation**

1. A non-invasive and inexpensive technology.
2. Relieves pain levels.

**Post-surgery care**

Most spinal fractures don't require surgery. The most common treatments include:

- **Bracing:** You might need to wear a back brace to hold your spine in alignment and help your broken vertebrae heal properly.
- **Physical therapy:** Strengthening the muscles in your back can improve your overall strength, help reduce bone loss and reduce the risk of future spinal fractures.
- **Cervical Collar:** Also known as neck braces or C collars are used to support your spinal cord and head. These collars are a common treatment option for neck injuries, neck surgeries, and some instances of neck pain.

**E. Massage therapy**

1. Improves upper body muscle strength and range of motion, and enhances function
2. Reduces pain levels
3. Reduces the anxiety and depression symptoms.

**Conclusion**

A malfunction in the brain or nervous system (spinal cord and nerves) is the cause of a neurological condition. These disorders are characterized by structural, biochemical, or electrical abnormalities in the brain, spinal cord, or other nerves. Seizures are characterized as disruptions in the brain's electrical activity. There are two types of seizures: partial and generalized. A stroke is characterized by an insufficient flow of blood to the brain. Alzheimer's disease patients experience dementia as a result of brain cell

degeneration. Schizophrenia is a disorder caused by certain irregularities in reality perception or expression. Parkinson's disease is caused by substantia nigra nerve cell degeneration. Headaches and sleep disturbances are two more prevalent ailments. Options for treatment differ depending on the illness. Anti-Convulsants, anti-parkinsonian medicines, anti-psychotics and anti-depressants are among the medications used in treatment. Medication therapy alone is insufficient; patients' conditions can occasionally be improved by non-pharmacological strategies. The goals of the rehabilitation program are to increase function, lessen symptoms, and raise the standard of living for the patient. Physical therapy includes strengthening back muscles and wearing a cervical collar. A back brace can be used to align the spine. Other non-pharmacological methods include upper-body muscular strengthening massage therapy.

**List of Abbreviations**

- **ALS:** Amyotrophic Lateral Sclerosis.
- **BMD:** Becker Muscular Dystrophy.
- **CNS:** Central Nervous System.
- **CV:** Cardio-Vascular.
- **DMD:** Duchenne Muscular Dystrophy.
- **HIV:** Human Immunodeficiency Virus.
- **MCI:** Mild Cognitive Impairment.
- **MD:** Muscular Dystrophy.
- **MND:** Motor Neuron Disease.
- **MS:** Multiple Sclerosis.
- **PD:** Parkinson's Disease.
- **RLS:** Restless Legs Syndrome.

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