Abstract

In this article, the authors try to situate the comorbid and co-occurring mental and cognitive disorders associated with epilepsy within a treatment paradigm that promises an increased quality of life for children with epilepsy. Although one of the world's oldest diseases, epilepsy still carries a very high burden of disease, stigmatization and low-treatment outcome in developing nations of the world, particularly in Nigeria. Apart from physical sufferings and social embarrassment caused by seizure disorders, empirical and clinical findings show that psychological and cognitive impairments are pivotal to high burden of disease and low quality of life suffered by children with epilepsy. The best practices that promise improved methods of curative and preventive interventions for epilepsy are trans- or multi-disciplinary approaches, which take into account both medical and psychological problems. These approaches are known to decrease the epileptogenic focus of seizures, as well as increase the mental functionalities of patients. Nevertheless, evidence-base and clinical research findings show that these approaches are rarely supported by the health care system in Nigeria- a system that is still marred in strict biomedical approaches, and have been shown to be disadvantageous in the effective treatment of epilepsy. The aim of this article is to re-evaluate Nigeria's conceptual and clinical approach to epilepsy and to open a new dialogue for effective treatments of childhood epilepsy. The authors have incorporated available evidence-based reports, anecdotal evidences, and empirical research findings to buttress and highlight their points.

1 C.C. Ajaelu is a Catholic priest, an American trained licensed clinical psychologist, and currently a lecturer at Nnamdi Azikiwe University, Awka Nigeria, with a background in experimental (laboratory) research, Marriage and Family Psychology, Counselling psychology, and clinical psychology, with specialization in Forensic Clinical neuropsychology. He is also a team member with an inter-disciplinary clinical study group on childhood epilepsy at Nnamdi Azikiwe University Teaching Hospital, Nnewi, Nigeria. Contact me at: cc.ajaelu@unizik.edu.ng.

2 C. I Onyemaechi is a clinical psychology PhD student at Nnamdi Azikiwe University, Awka, Nigeria. She currently works at the Psychological Treatment Centre of the Department of Psychology, Nnamdi Azikiwe University, Awka.

3 A. L. Atalor is an Experimental Psychology M. Sc student at the University of Nigeria, Nsukka, Enugu State, Nigeria. She is a Graduate Assistant in the Department of Psychology, Nnamdi Azikiwe University, Nigeria.
Key words: epilepsy, multidisciplinary approach, seizure disorder, quality of life, epileptogenic focus, neuro-rehabilitation therapy, neurodevelopmental function, antiepileptic drugs.

Even with increase in educated population, number of universities and abundance of natural recourses, evidences showing the prevalence of epileptic seizures in Nigeria are irrefutable. This has put Nigeria in a precarious position as a nation ill-equipped and incompetent to handle the growing cases of this disorder. The evidence that epileptic seizures is on the increase in Nigeria have been highlighted and fully documented by researchers (e.g., Olubunmi, 2006; Sanya & Musa, 2005), advocacy groups (e.g., Vanguard News, 2015; Ayo-Aderele, 2015), and Not-for Profit Organizations (e.g., ILAE, n.d., Information Nigeria, 2013). Despite the new waves of enlightenment, there is a strong evidence to support the view that Nigeria is in no measure equipped (both on infrastructure and human capabilities) to handle and deal with the prevalence cases of epilepsy. Many factors have been identified as impeding situations, which include: a) belief system, b) poor healthcare system, c) lack of political will among policy-makers, and d) inability to translate scientific findings to effective implementation strategies.

Belief system: There are obvious and compelling evidences buttressing Nigerian's perceptual and emotional propensity to superstitious beliefs (Jayeola-Omoyeni, Oyetade & Omoyeni, 2015; Houreld, 2009; Ajaelu, 2004). Irrespective of educational qualifications and socioeconomic status, an average Nigerian is usually propelled by a belief in witchcraft, evil spirit, or "spiritual attacks" as a causation of almost every misfortune in life (Gbule & Odili, 2015; Ajaelu, 2004). Superstitious beliefs are antithetical to scientific thinking, and plunge the mind into distorted and uncreative thinking pattern (Ajaelu, 2016/2016; Gbule & Odili, 2015). For example, many Nigerians still belief that epilepsy is communicable, infectious and can be linked to demonic forces. In an evidence-based report, it was revealed that about 80% of parents of children with epilepsy believed that their child's epileptic seizure could be linked to "witchcraft", "evil spirit," "demonic" or "spiritual" attacks perpetuated by enemies (Gbule & Odili, 2015; Sanya, Salami, Goodman, Buhari & Araoye, 2005). About 35% of these people believed that epilepsy could be contracted through the saliva of an epileptic patient. Approximately 60% thought it was caused by possession of evil spirit, while 10% believed epilepsy was the same as psychotic disorder (Sanya et al, 2005). The researchers noted that a negative attitude toward epilepsy is still ingrained in many Nigerians. A similar finding was reported by Alikor and Essien (2005) in their study among South Eastern Nigerians.

Poor healthcare system: If there is any place where Nigeria could be applauded for excelling, it is certainly not in health care. Since independence, the health care system in Nigeria has seriously dwindled and marred in an immerse (immense) lack of direction and patient-oriented
implementation plans (WHO, 2016). Nigeria’s inadequate health systems is a further constrained in adoption of the stabilization programmes initiated by the International Monetary Fund or Structural Adjustment programmes of the World Bank (Scott, Lhatoo, & Sander, 2001). There are no appropriate regulation and enforcement strategies aimed at disseminating and circulation health care information to people. With epilepsy, very little has been done to promote effective treatment and management of the ailment. Research funding and incentives in this area are rare, and in many cases nonexistent. The government and policy-makers are not well equipped to understand the direct and collateral effects of untreated or ill-managed epilepsy in the development and growth of a nation. As Nigeria's education system becomes more and more watered down, its health system continues to implode. Treatable and manageable illnesses, like epileptic seizure, continue to create more burden to the country's development and growth.

**Lack of political will:** In developed and well-informed societies people are elected to be the voice to the electorate. They are solely and principally committed to finding ways of making life meaningful for the whole people. They make policies and create avenues for research in different areas of human endeavour because they know and understand that scientific research is the power that holds national growth. In Nigeria, such categories of elected officials are very rare to come by, and the consequence is the dog-eat-dog scenario, where the elected officers fight for their own interest. This is demonstrated in poor leadership, and innate propensity among Nigerian politicians to serve themselves rather than thinking of the welfare of the citizens. Even where research funding is appropriated for health care, it ends up in private coffers.

For this reason, the health care system in Nigeria has not been updated and upgraded to mirror the modern integrated approach, where professionals from different disciplines come together to effectively handle a particular disease or disorder. For example, even in this 21st century, Nigerian Medical Association refuses to acknowledge the critical role of clinical psychology in health care, and unfortunately the Nigeria leadership refused to be informed or pretended not have know the powerful therapeutic and interventional roles psychology is playing in developed and civilized societies.

**Inability to translate scientific findings to effective implementation strategies:** Modern approach to epilepsy favours multi-disciplinary approach, where neurologists, neurosurgeons, and clinical neuropsychologists collaborate as a team to offer effective and meaningful treatment and rehabilitation to people with epilepsy (Ajaelu, 2016). Scientists uphold evidence-based clinical practice, where treatment outcome are further tested and evaluated for the efficacy, and best proven clinical practices where interventions are effectively disseminated and implemented to a wider population and audience. In the same ramification, treatment of epilepsy collaborative work could be futile and a waste of time.

**The Comobidity of Epilepsy and Multidisciplinary Approach to Diagnosis**
The science behind epilepsy reveals that epileptic seizures are linked to excessive electrographic discharge, which disrupts the brain's activities, and in so doing traumatizes the brain. In many situations, these disruptions can seriously affect the normal functions of the neurons (cells) and their transmitters, which may lead to the death of some essential neurons (Hung, Hu, Kwong, Kwong, Lee... Ho, 2008). Since the brain is the centre of human emotional, mental and cognitive abilities, epileptic attacks, depending on the region of the brain affected the electrographic discharge, could lead to problems in cognitive and behavioural functions. In fact, it has been noted that even a single epileptic attack could affect an individual's behavioural, intellectual, and emotional well-being (Hung et al, 2008; Fisher, van Emde Boas, Blume, Elger... Engel, 2005). Furthermore, the side-effects of antiepileptic drugs have their negative impacts. For example, it has been noted that even though more than 70% of epileptic seizures are successfully controlled by medication (Eadie, 2012), yet no anticonvulsant drugs go without some negative aftermath effect (Hung et al, 2008; Fisher et al, 2005). For this reason, even when epileptic attacks recede (through anti-epileptic drugs), and seizures are said to have been remitted, the individual may not be free of poor intellectual output, wired and bizarre personality, as well as expositive behaviour.

From this perspective, even when an individual is affirmed to be "cured" or "relieved" of epileptic attacks after an isolated medical treatment, he or she could still experience great problems with functionality, productivity and comparable quality of life (QOL) (WHO, 2016). The same scenario goes with patients for surgery. Even though surgery have done much to stop violent epileptic seizures, yet research shows such procedures have not totally elevated the quality of life of epileptics because mental, psychological and cognitive issues associated with pre-surgery are completely neglected. So, since epilepsy is known to significantly reduce quality of life (QOL) of sufferers (Akinsulore & Adewuya, 2010), leading to inability to learn or hold a job (Meador, 2007), it is necessary that both treatment and preventive modalities for epilepsy should encompass medical, cognitive and psycho-social issues.

In Nigeria, children with epilepsy are likely to drop out of school, suffer neglect or abandonment from their patients, and hence become nascent to themselves, family and the society. As adults, they are unable to secure or retain jobs, find it impossible to marry, known to have higher rate of divorce, and are tormented to the point of becoming vagrant vagabonds (Olubunmi, 2006). If this is the fate of epileptics in Nigeria, then our understanding of QOL among epileptics must be oriented toward a holistic approach that works to improve patients':

a. **Physical health**: health care system that elevates daily function, frequency and severity of seizures, and side effects of antiepileptic drugs;

b. **Mental health**: Health case model that takes into considerations mood and anxiety disorders, cognitive disabilities and personality disorders, and

c. **Social health**: Education and rehabilitation aid (aimed) at interpersonal relationships, support system, perceived stigma resulting from epileptic attacks, and skill acquisition.
Consequently, when the word "cured" or "relieved" is used to refer to an individual's remission from seizure attacks (for at least 10 years), and off anti-seizure medicines (for at least the last 5 years), it should be measured by the quality of life (functionality and productivity) the individual experiences (Fisher, Acevedo, Arzimanoglou, Bogacz, Cross, ...Wiebe, 2014).

**General Concept of Epilepsy**

Epilepsy, as a neurological disorder, is characterized by sudden but brief seizure attacks, with concomitant impact to physical, psychological and social abilities of the sufferer. It is usually defined as recurrent and unprovoked attacks that alter the motor coordination, consciousness, and sensory experiences of the sufferer (Chang & Lowenstein, 2003; Snyder, 1998). The tendency to conceive epilepsy as a "disease" rather than as a "disorder" has been argued by many epileptologists, citing that epilepsy is not homogeneous since it comprises many different disease conditions (Chang & Lowenstein, 2003). The term "disorder" implies a functional disturbance, while "disease" implies (but not always) a more lasting derangement of normal function (Fisher et al, 2014). However, many heterogeneous health problems, like cancer or diabetes, comprise numerous sub-disorders and are still considered to be diseases.

Epilepsy, perceived from a functional perspective, is a chronic disorder of the central nervous system characterized by sudden, periodic and recurrent seizure attacks, and has been linked to excessive electric discharge in neurones of the Central Nervous System (CNS). It is considered as a spectrum condition with a wide range of seizure-types that vary from person to person, and situation to situation. The conditions that lead to seizure have been linked to abnormal electrical discharge, which occurs when the normal pattern of impulses in the brain is disrupted. This abnormality (within the neuronal membrane) generates rapid firing of several neural activities at once (WHO, 2016), which result in paroxysm. Paroxysm, sudden spasm or convulsion, alters motor coordination or activity, impedes consciousness, and modifies sensory experiences. It is necessary for clinicians to note that not all paroxysmal attacks are diagnosed as epileptic. For example, convulsive seizures, which are the most common type of paroxysmal event especially those occurring during an acute illness, are not classified as epileptic (Tavares, Ribeiro, Capela, Cerqueira, Ferreira, 2015; Snyder, 1998).

Even with this in mind, a growing number of epileptologists and neuroscientists agreed that every first-time seizure should be treated with due seriousness, since it could act as a precursor of a latent predisposition to further seizures (Chang & Lowenstein, 2003; Snyder, 1998). This view is echoed in the classification manual of epilepsy published by the International League Against Epilepsy (ILAE) and the International Bureau for Epilepsy (IBE), umbrella organizations under which epilepsy and epileptic conditions are studied. For example, in 1970 the organizations introduced the first formal classification system for seizures and epileptic
attacks, which were later revised in 1985 to reflect the new perspectives in research and clinical evidence-based reports (Chang & Lowenstein, 2003).

In 2005, the organizations further redefined epilepsy from conceptual and practical (clinical) perspectives. Conceptually, epilepsy was conceived as a disorder of the brain characterized by an enduring predisposition to generate paroxysms, and can elicit biological, cognitive, psychological, and social consequences (Fisher, et al., 2014; WHO, 2016). Practically (clinically), it was conceived as a condition where an individual has two or more sudden and unprovoked seizures within a space of 24 hours apart. The effort to standardize the diagnostic schema of epilepsy to reflect a global picture is still a work in progress. This is because since the ictal phenomenon (period of time a seizure occurs) of epilepsy varies from culture to culture (Irimia & Van Horn, 2015; Engel, 2001), a global diagnostic manual may be difficult.

For this reason, the operational definition provided by the ILAE is not without its own limitations since, as we previously stated, a single attack may be a precursor for a hidden predisposition. In other words, even though single or occasional seizures, as well as those that occur during an acute illness, are not operationally classified as epilepsy (Olubunmi, 2006), many evidence-based clinical reports maintain that an occasional seizure can easily turn into epilepsy. Therefore, due precautions must be taken when evaluating every first-time seizure attacks and suggestions have been made that, if possible, a low dose of antiepileptic drugs could be administered to serve as a proactive intervention, as well as neuropsychological evaluations. This is because, as pointed out previously, the first attack could have debilitating consequences on the individual's mental, cognitive and social well-being (WHO, 2016; Snyder, 1998; Suzuki, Aihara & Sugai, 1991). This approach is better achieved under a multidisciplinary team work, which has been advocated as the most effective intervention approach to epilepsy (Fisher, et al., 2014; Goldstein, Plioplys, Zelko, Mass, Corns ... Nordli, 2004; Snyder, 1998).
Approach to Multidisciplinary Interventions in Epilepsy

The recent development in multidisciplinary dimension in the study of epilepsy was captured in the ILAE’s 2014 definition of epilepsy, when it stated that epilepsy is a disorder of the brain characterized by an enduring predisposition to generate epileptic seizures and with neurobiological, cognitive, psychological, and social consequences (Fisher, et al., 2014; Panayiotopoulos, 2011). This multidisciplinary approach in both diagnosis and treatment is buttressed by comorbidities in epileptic seizures which have been linked to an increased frequency in psychological disorders, developmental and intellectual disabilities, and other problems with psychosocial development (Hung et al, 2008; Goldstein et al, 2004). A variety of diagnostic mechanisms (with no particular one to use in isolation) are formulated to infer with the location of epileptogenetic foci, and identify areas of the brain that may affect developmental, cognitive and mental functioning (Snyder, 2000; also see Table 2).

Some seizures can be identified as symptomatic seizure, meaning that their physical components can be linked to anatomical and neurobiological sources (like infection, trauma, tumor, vascular malfunctions, toxic chemicals, very high fever and other neurological malfunctions or disorders). Idiopathic seizures, on the other hand, are those seizures of unknown specific sources, but (that) started spontaneously, in the absence of other diseases of the CNS (Kolb & Whishaw, 1996).

Prevalence of Epilepsy

Epilepsy is a noncommunicable disorder that affects people of all ages, and the most common non-infectious neurological disease in developing countries, including Nigeria (World Health Organization, 2000; Pandolfo, 2011; Senanayake & Roman, 1993). However, it has been noted that epilepsy is more common among older adults (Wyllie, 2011; Brodie, Elder, & Kwan, 2009; Holmes & Browne, 2008). In 2013 alone, for example, about 22 million people world-wide were diagnosed with a new case of epilepsy (Global Burden of Disease Study, 2015). Nearly 80% of epileptic cases occur in developing nations (Murray, 2014). In 2013, it resulted in 116,000 deaths up from 112,000 deaths in 1990 (Bernke, 2011). People with epilepsy respond to treatment approximately 70% of the time. In Nigeria, people with epilepsy and their families suffer from stigma and discrimination (WHO, 2016).

It is estimated, however, that about 50 million people worldwide are currently living with epilepsy, about three fourth of these people are living in low- and middle- income countries, where adequate treatment is difficult to get. The estimated proportion of the general population with chronic epilepsy (i.e., continuing seizures or with the need for treatment) at a given time is between 4 and 10 per 1000 people (Bergey, 2013). However, some studies show that the prevalence of this disorder is higher in low- and middle-income countries, suggesting a proportion of 7 and 14 per 1000 people. Africa has been implicated as having the highest cases of untreated epilepsy (WHO, 2002).
In many African countries the situation is more complicated because people with epilepsy (PWE) are treated like outcasts, which stems from the beliefs of linking the disorder to the effect of witchcraft, the revenge of an aggrieved ancestral spirit or consumption of something harmful in utero (Longo, 2012). In developed nations, the onset of new epilepsy occurs most frequently at infancy and old age (Wyllie, 2011), whereas in developing nations a new onset occurs more in older children and young adults. This disparity does not suggest that different types of epilepsy exist between people in developed nations and those in developing nations. It means, however, that the underlying differences are environmental factors rather than biological factor(s) (Newton, 2012).

Furthermore, research findings show that about 5–10% of people in the world will have an unprovoked seizure by the age of 80 (Wilden & Cohen-Gadol, 2012), and the chances of experiencing a second seizure are between 40 and 50% (Berg, 2008). In developed nations, legal safety restrictions are placed on those with epilepsy, ranging from driving to swimming alone in a pool until they are free of seizures for a specific length of time (Devlin, Odell, Charlton, & Koppel, 2012). With Disability Acts that prohibit undue restriction or discrimination of people with disabilities, protection of people with epilepsy is assured, and effective interventions available. These privileges are not available for epileptics in Nigeria yet reliable evidence shows that nearly 80% of the world's epileptics live in developing countries of which Nigeria is a part (Devlin et al, 2012). Most cases of epilepsy are found in rural and sub-urban areas (WHO, 2002).

Causes of Epilepsy

Recent research investigations underscore the early theory of epileptogenic focus, which states that epilepsy originates in the CNS, implicating a discrete area of the brain (and its neurons, brain cells) wherein out-of-control electrical discharges give rise to seizure activities (Snyder, 1998). The brain cells are propelled by electrical impulses, and mediated by chemical messengers called neurotransmitters. These neurotransmitters form the life-wire of all activities including behavioural and cognitive components of human activities. Whatever obstructions or damages sustained by these brain cells and their messengers have the potency of disrupting the workings of the brain, causing a lot of physical and mental harms (harm) of which seizures are one of the cases (Ajaelu, 2016). Hence, seizures that occur as a result of health problems like stroke, head injury, toxic ingestion or metabolic problem, are known to be acute symptomatic seizures, which are categorized as seizure-related disorders, but not necessarily epileptic (Neligan, Hauser, & Sander, 2012). In other words, all seizures are not epileptic (re-occurring and sustained seizures). For this reason, we will discuss the causes of epilepsy from two perspectives, namely, **idiopathic (or primary) epilepsy** and **symptomatic (or secondary) epilepsy**.
Idiopathic (or primary) epilepsy: This is a type of seizure not associated with a definite causation, but it is believed to have some genetic connections. It accounts for about 20% of epileptogenic focus witnessed in benign (Rolandic) childhood epilepsy with centrotemporal spikes (BCECTS) (Olubunmi, 2006). Research in this line has revealed mutations in certain genes that may affect electrical transmission in the brain (Pandolfo, 2011). Probe into neuron-gene formation or brain hypothesis shows that neurons, as brain cells, contain information necessary to regulate and synthesize the actions of the brain, which are mediated by the brain's DNA (Ajaelu, 2016). Mutation in neuron-genetic formation could directly or indirectly lead to excessive activities of the neuron's ion channels, enzymes, GABA, and G protein-coupled receptor or receptors (Simon, Greenberg, & Aminoff, 2012; Pandolfo, 2011; Kumar, 2008; Berkovic, Mulley, Scheffer, & Petrou, 2006). When such happens, an abrupt change in neural communication system may give raise to undue electrical discharge. Cell death and synaptic pruning that lead to necrosis (assassination by poisons) or apoptosis (suicide) have been hypothesized to result in indirect causation of some types of seizures (Ajaelu, 2016).

1. Symptomatic (or secondary) epilepsy: In this type of epilepsy, it is believed that various conditions and factors may be responsible, including genetic abnormalities, head (injuries) trauma, infectious diseases (especially of the central nervous system), tumours, stroke, and birth-related brain damage (WHO, 2016). It is also believed that brain tumours account for about 30% of this type of epileptic attacks (Bhalla, Godet, Druet-Cabanac, & Preux, 2011). Furthermore, epilepsy has been linked to coeliac disease (autoimmune disorder of the small intestine) and non-coeliac gluten sensitivity (an allergic reaction resulting from ingesting gluten-containing foodstuff) (Jackson, Eaton, Cascella, Fasano & Kelly, 2012; Grossman, 2008). Meningitis accounts for about 10% of epilepsy cases, although it causes seizures only during the infection-phase (Jackson et al, 2012). While herpes simplex encephalitis is responsible for 50% of adult seizures (Jackson et al, 2012), with a high risk of epilepsy at about 25% (Shorvon, 2011), it has also been revealed that cerebral malaria and chronic alcohol have high risk of epilepsy (Bhalla et al, 2011; Shorvon, 2011). People with cerebral palsy have an increased risk of epilepsy (Newton, 2012). Status epilepticus, a dangerous condition in which epileptic fits follow one another without recovery of consciousness between them, is the worst of all seizures (WHO, 2002).

Symptoms and Diagnosis

Symptoms are what patients feel and report as an interpretation and understanding of their conditions. Clinically, it is called "chief complaint" or "presenting problem." Another important aspect of symptomology as it relates to epilepsy is that it has elaborate and conspicuous signs observable by others. This is called paraxym. In a clinical perspective, the ability of a trained clinical professional to accurately juxtaposition themselves as people with the ability to diagnose a set of symptom and sign, and to determine which symptom and sign best explain the patients'
condition within classification schemes or criteria of a given disorder or disease is called diagnosis (see Table 1).

In fact, there is another place where these procedures are well pronounced than in the diagnosis of epileptic seizures. Due to the complex features of seizures, the "dramatic" and convoluted nature of the disorder, adequate diagnosis of seizure disorders is difficult and complicated. Yet proper identification of the nature and causes of a seizure is very essential in determining appropriate treatment and management modalities. For this reason, the modern modality has favoured multidisciplinary and community-based approaches (Scott et al, 2001). A clinical neuropsychologist working with or in collaboration with a neurologist or neuropsychiatrist is believed to be more effective in the diagnosis and treatment of epilepsy than a biomedical approach (Goldstein et al, 2004).

Guideline to Diagnosis

Clinicians should look for three major symptoms and signs by asking three important questions and ascertaining their answers from the patients or caregivers:

a. Does the patient report having an aura? An aura or a subjective feeling that patients experience minutes to seizure attack or ictus, is a warning sign for an impending seizure attack, which is often (but not sequentially) followed by an ictus - a period of time during which an epileptic seizure occurs. Probing for an aura should be discrete and pungent since the symptom is an important distinguishing factor of an epilepsy, but yet subtle and takes many forms of sensations. It varies from person to person and from culture to culture. For example, some patients may report the smell of a certain odor (which may be "strange" to the clinician, yet peculiar or unique to the patient's culture) or hearing noises (which may have some local or religious connotations). There is also a "gut-feeling" experience in which the body "speaks" to the patient as to an impending attack. Sometimes, such feelings may be indescribable for the patient, but the feeling is real. Some patients (especially in spiritually charged cultures) may talk of seeing a "vision" or a special "spiritual" experience before the attack. Some patients may have no clue about these personal experiences until asked during clinical interview (see Table 1).

b. Does the patient experience loss of consciousness? Loss of consciousness can be seen as a sign, although some may occur as a symptom, in which only the patient experienced a subtle and brief disorientation or lack of awareness. Generally, loss of consciousness in epilepsy is always pronounced, and patients or their caregivers report a complete collapse in senses, leading to a complete lack of memory or black-out of what had happened.
c. Does the patient experienced dramatic body movement(s) or clonic and tonic? This is the hallmark of many epileptic seizures, especially in Jacksonian seizure, in which "violent" and "automatic" body movements (jerking) are prominent. Here, there is a motor agitation component, which completely varies from person to person. But common and consistent movements are shaking movement as though hypothermic, automatic movement like rubbing the hand or chewing (without anything in the mouth to chew), and alternating contraction and relaxation of muscles (clonic). Most of the diagnostic impression(s) of seizures center on these signs and symptoms. But differential diagnosis of epilepsy is difficult and have been a subject of debate for long (Snyder, 2000).

Table 1: Differentiating symptoms from signs

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Sign</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emotional Feelings: fear, dread, terror, euphoria and excitement. Somatosensory sensations: oppression, shivering, and a sensation of body heat. <strong>Functionality:</strong> problems with working independently, particularly tasks which follow a sequence, where one answer is a base to the next step.</td>
<td><strong>Personality:</strong> Bizarre behaviour and complex motor activities, including using obscenities, jumping or pedaling movements, agitation of the upper limbs as if struggling, or rubbing the genitals. <strong>Autonomic features:</strong> palpitations, choking, pallor, flushing, salivation and migraine like sensations. There may be disturbances in the smooth flow of spontaneous speech.</td>
</tr>
</tbody>
</table>

Symptoms also revolve around where the seizure occurs in the brain hemisphere, which comprises the four (frontal, parietal, occipital and temporal) lobes.

a. Frontal lobe controls voluntary movement in the fingers, lips and jaw, speech production, emotion, memory, self-awareness and executive functions. Seizures emanating from the frontal lobe is (are) implicated in affecting patients' personality, memory, anxiety level, alertness and awareness (see Table 1). Although symptoms depend on the areas of the frontal lobe the seizure is located, but there are common feature associated with all frontal lobe seizures:
   - They are brief and occur only in sleep, and are characterized by focal of simple (partial), secondarily generalised seizures or combinations of the two.
   - Frontal lobe epilepsy is a common cause of focal seizures, however it is less common than temporal lobe epilepsy.
Focal (partial) seizures that begin in the frontal lobe are briefer, more abrupt in onset and termination, and occur with greater frequency than focal (partial) temporal lobe seizures.

Table 2: Diagnostic procedure for temporal lobe epilepsy (TLE).

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Sign</th>
<th>Diagnostic Techniques</th>
</tr>
</thead>
<tbody>
<tr>
<td>History of illness</td>
<td>What the clinician can see or notice in patient</td>
<td>Necessary test to ascertain diagnosis and affected areas</td>
</tr>
<tr>
<td>Patient has a long history of seizure</td>
<td>-Memory impairment</td>
<td>-Magnetic resonance imaging (MRI), when suspecting temporal lobe epilepsy</td>
</tr>
<tr>
<td>Early episode of anoxic as a child</td>
<td>-Aura, which may be classified as follows:</td>
<td>-Computed tomography (CT): for structural brain-imaging</td>
</tr>
<tr>
<td>A family is known to have a history of epilepsy</td>
<td>a) Somatosensory and</td>
<td>-Positron emission tomography (PET): useful for interictal seizure localization in surgical candidates especially when MRI is normal</td>
</tr>
<tr>
<td>Functionality:</td>
<td>b) special sensory like:</td>
<td>-Single-photon emission CT (SPECT) useful only for surgical candidates).</td>
</tr>
<tr>
<td>problems with working independently, particularly tasks</td>
<td>• Olfactory, gustatory, and visual illusions and in some cases hallucinations and vertigo</td>
<td>-Magnetic resonance spectroscopy (to rule out other possibilities in differential diagnosis.</td>
</tr>
</tbody>
</table>
| which follow a sequence, where one answer is a base to the next step, forgetfulness, does poorly in school-started with episode. | -Autonomic, changes in heart rate, piloerection, and sweating | -Electroencephalography (EEG) used for all patients with suspected seizure disorders, including temporal lobe epilepsy.
| Important features                 | -Psychology: Délai vu or jamais vu;      | -Magnetoencephalography (MEG): mainly used for coregistration with MRI to give magnetic source imaging in 3-dimensional space. |
| Check and probe for the following:| depersonalization or derealization; fear or anxiety; dissociation | -Halstead-Reitan Battery (HRB): Neuropsychological test that detects CNS dysfunction |
| a) Aura, Motionless stare, dilated pupils, and behavioral arrest |                                         |                                                           |
| b) Oral alimentary automatisms, manual automatisms, or unilateral dystonic limb posturing; reactive automatisms may also be seen |                                                           |
| c) Possible evolution to a secondarily generalized tonic-clonic seizure. |                                         |                                                           |
| d) Postictal period that can include confusion, aphasia, or (by definition) amnesia (Y Ko, 2015) |                                         |                                                           |

Types and Classification of Epilepsy

The classification of epilepsy, which acts as a useful baseline for studying and monitoring epilepsy, was originally organized for clinical purposes. Since its inception in 1970, the paradigm upon which the classification system was based has come under an intense criticism due to criticisms that it lacked clarity and clinical orientation. Therefore, a commission was set up by the ILAE into the criticisms, and in 2010 three categories of epilepsy emerged, namely, genetic, structural/metabolic, and unknown cause (Engel, 2006). In 2011, a new recommendation was further issued, dividing epilepsy into four categories, with a number of sub-categories (see Table 3) reflecting recent advancement made in science and technology (Shorvon, 2011).

In this 2011 recommendations, seizures were classified according to their primary source of ignition or etiology (see Table 3). When a seizure is associated with a specific cerebral location, that is, concentrates in a region of discharging epileptogenic foci (a discrete area of the brain wherein the electrical discharges that give(s) rise to a seizure originate) is called partial seizure. It is, however, called generalized seizure when no known specific sources of discharging
epileptogenic foci is implicated (see Table 4). So, from this perspective, two major categories of epilepsy can be distinguished, namely Partial and Generalized seizure disorders (Bradley, 2012).

**Table 3: Guide to 2011 categories of epilepsy**

<table>
<thead>
<tr>
<th>Category: (Idiopathic) Unknown cause</th>
<th>Category 2: Symptomatic</th>
<th>Category 3: Provoked</th>
<th>Category 4: Cryogenic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unknown cause(s) are linked mostly to genetic or presumed genetic origin. It can be: a) Pure epilepsies due to single gene disorders b) Pure epilepsies with complex inheritance</td>
<td>Symptomatic epilepsy is associated with gross anatomic or pathologic abnormalities. It is divided into two types with subcategories: 1. Mostly genetic or developmental causation a) Childhood epilepsy syndromes b) Progressive myoclonic epilepsies c) Neurorotaneous syndromes d) Other neurologic single gene disorders e) Disorders of chromosome function f) Developmental anomalies of cerebral structure 2. Mostly acquired causes a) Hippocampal sclerosis b) Perinatal and infantile causes c) Cerebral trauma, tumor or infection d) Cerebrovascular disorders e) Cerebral immunologic disorders f) Degenerative and other neurologic conditions, like neural death.</td>
<td>Provoked is said to be related to a specific systemic or environmental factor as its predominant cause. It is divided into two: 1. Provoking factors 2. Reflex epilepsies</td>
<td>Cryogenic seizure is of a presumed symptomatic nature in which the cause has not been identified</td>
</tr>
</tbody>
</table>

**Partial seizures:** Partial seizure, as we previously discussed, is so called because its particular focal or localized areas in the brain, believed to be responsible for seizure attack, are prominent and identifiable (Bradley, 2012). Under this type of seizure, two types of seizures can be distinguished and diagnosed, namely, *simple* and *complex* partial seizures (Table 4). Generally speaking, partial seizures may be difficult to isolate, especially those that occur in a small region of the brain, because they are difficult to be picked up by some brain imaging systems. But with the discovery of PET this shortcoming has been eliminated.

**Table 4: Types of Epilepsy**

<table>
<thead>
<tr>
<th>Categories of Epilepsy</th>
<th>Types of Seizures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generalized Epilepsy</td>
<td>Partial Epilepsy</td>
</tr>
<tr>
<td>Idiopathic (Unknown, but link to possible genetic causes)</td>
<td>Childhood absence epilepsy - Juvenile myoclonic epilepsy - Epilepsy with grand-mal seizures on</td>
</tr>
</tbody>
</table>
Symptomatic (cause known), may be linked to anatomic or pathologic abnormalities cryptogenic (cause not identified)

- West syndrome
- Lennox-Gastaut syndrome
- Others

- Temporal lobe epilepsy
- Frontal lobe epilepsy
- Others

**Simple Partial Seizure:** In simple partial seizures a small part of one of the lobes may be affected, and the person remains conscious during the attack. It last briefly, and can often lead to a larger seizure like a complex partial seizure. When this is the case, complex partial seizure is diagnosed and the simple partial seizure is regarded as an aura. However, if a partial seizure spreads from one hemisphere to the other side of the brain, this will give rise to a secondary generalised seizure. The person will become unconscious and may well have a tonic clonic seizure. Partial seizures are common in temporal lobe epilepsy. The attacks are usually short, and last less than a minute. It is characterized by some features like numbness, tingling sensation, jerking of a limb, twitching of the face, blushing, increase heart-rate, nausea, hallucinations and anxiety (see Table 5).

<table>
<thead>
<tr>
<th>Partial Seizures</th>
<th>Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple (awareness is retained)</td>
<td>a. Jerking, muscle rigidity, spasms, head-turning</td>
</tr>
<tr>
<td></td>
<td>b. Unusual sensations affecting either the vision, hearing, smell taste or touch</td>
</tr>
<tr>
<td></td>
<td>c. Memory or emotional disturbances</td>
</tr>
<tr>
<td>Complex (Impairment of awareness)</td>
<td>Automatisms such as lip smacking, chewing, fidgeting, walking and other repetitive, involuntary but coordinated movements</td>
</tr>
<tr>
<td>Partial seizure with secondary generalization</td>
<td>Symptoms that are initially associated with a preservation of consciousness that then evolves into a loss of consciousness and convulsions.</td>
</tr>
</tbody>
</table>

From clinical perspectives, seizures are classified either as **partial** or **generalized**, and this classification is based on how the abnormal brain activity begins. For example, when seizures appear to result from abnormal activity in just one part of the brain (as confirmed by EEG), they're diagnosed as partial seizures. But in absence of an EEG (which is an anomaly in clinical practice), signs and symptoms may be used (see Table 6). When seizures seem to involve most or all of the brain, the seizures are called generalized (See tables 5 and 6).

<table>
<thead>
<tr>
<th>Types of Epilepsy</th>
<th>Generalized Epilepsy</th>
<th>Partial Epilepsy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Idiopathic (genetic causes)</td>
<td>Childhood absence epilepsy</td>
<td>Benign focal epilepsy of childhood</td>
</tr>
</tbody>
</table>
Complex Partial seizure: Complex partial seizure is characterized by vacant stare, loss of expression, confused appearance and altered consciousness. In some patients, there be unusual and repetitive behaviour, including chewing; fidgeting, walking around, which may last from 30 seconds to three minutes. After the seizure, the person is often confused and may not remember anything about the episode.

Generalized Seizure (‘Grand mal’)

As its name projects, generalized seizure disorder or Grand Mal seizure is known to spread its epileptogenic foci activities to the entire or most regions of the brain, and has been implicated in deep structure of the brain located in the base and middle of brain stem or thalamus. It is the most recognized and prevalent seizure, accounting about one third of all patients with epilepsy (Snyder, 2000). Unlike partial seizure, it begins with a sudden loss of consciousness and often induce(s) some "odd" cry or noise. Seconds after the cry, the individual (if standing or sitting) falls down and his or her body stiffens (tonic) which is followed by jerking of the muscles (clonic) (see Table 7). Breathing suspends temporarily causing the lips and complexion to look grey/ bluish. Saliva may accumulate in the individual’s mouth, sometimes with blood if the tongue has been bitten and loss of bladder control may also occur. This type of seizure usually lasts approximately for two minutes or less which is often followed by a period of confusion, agitation and sleep.

Table 7: The Subtype of generalized motor seizure of Generalized Seizures

<table>
<thead>
<tr>
<th>Generalized Seizures</th>
<th>Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Grand Mal” or Generalized tonic-clonic</td>
<td>Unconsciousness, convulsions, muscle rigidity</td>
</tr>
<tr>
<td>Absence (Petit mal) Seizure (childhood onset, 4-12 years), Rarely persist into adulthood</td>
<td>Brief (5- to 30-second) loss of consciousness and staring spell.</td>
</tr>
<tr>
<td>Myoclonic</td>
<td>Sporadic (isolated), jerking movements</td>
</tr>
<tr>
<td>Clonic</td>
<td>Repetitive, jerking movements</td>
</tr>
<tr>
<td>Tonic</td>
<td>Combination of Muscle stiffness, rigidity and Repetitive, jerking movements present in an episode.</td>
</tr>
</tbody>
</table>

Note: Unlike patients with partial seizure, patients with generalized seizure do not experience and psychic or sensory disturbances at the start of the seizure (like aura).

Absence seizures (‘petit mal’): As stated in Table 7, this type of seizure normally start in childhood (but may occur in adults), and rarely linger into adulthood (Snyder, 2000). It is
sometimes mistaken for daydreaming and inattentiveness. There is often a family history. It can start suddenly and are characterized by staring, loss of expression, unresponsiveness and, stopping any activity one is doing before the episode. Sometimes patients exhibit eye blinking or upward eye movement which can last from two to 10 seconds and end abruptly. The individual usually recovers immediately and resumes previous activity, however, with no memory of the seizure. Children often outgrow this type of seizure by puberty. These individuals usually retain their normal intelligence, but due to constant occurrence of the seizure, as well as the embarrassment it creates, gaps and disruption in learning and socialization may present a great challenge to the child, if not managed.

**Myoclonic seizures:** These types of seizures are very short but are associated with severe muscle jerks usually involving the upper body. Consciousness may not be impaired and the person may feel confused or drowsy if several seizures occur over a short period. It can also lead to a tonic clonic seizure if not well managed.

<table>
<thead>
<tr>
<th>Tonic phase</th>
<th>Clonic phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>The patient will quickly lose consciousness, and the skeletal muscles will suddenly tense, often</td>
<td>The patient’s muscles will start to contract and relax rapidly, causing convulsions. These may range</td>
</tr>
<tr>
<td>causing the extremities to be pulled towards the body or rigidly pushed away from it, which will cause</td>
<td>from exaggerated twitches of the limbs to violent shaking or vibrating of the stiffened extremities.</td>
</tr>
<tr>
<td>the patient to fall if standing or sitting. The tonic phase is usually the shortest part of the</td>
<td>The patient may roll and stretch as the seizure spreads. The eyes typically roll back or close and</td>
</tr>
<tr>
<td>seizure, usually lasting only a few seconds. The patient may also express brief vocalizations like a</td>
<td>the tongue often suffers bruising or lacerations sustained by strong jaw contractions. The lips or</td>
</tr>
<tr>
<td>loud moan or scream during the tonic stage, due to air forcefully expelled from the lungs.</td>
<td>extremities may turn slightly bluish (cyanosis) and incontinence is seen in some cases.</td>
</tr>
</tbody>
</table>

Note: Due to physical and nervous exhaustion, postictal sleep with stertorous breathing invariably follows a tonic–clonic seizure. Confusion and complete amnesia upon regaining consciousness is usually experienced and slowly wears off as the patient becomes gradually aware that a seizure occurred

**Tonic seizures or ‘drop attacks’** These cause a sudden, brief stiffening of the muscles of the whole body, causing the person to become rigid and fall rapidly if they are standing or sitting. Recovery is fast, but injuries can be sustained. It can also occur in sleep. Prompt diagnosis and intervention should follow immediately.

**Atonic seizures (‘drop attacks’):** They are sudden, brief loss of muscle tone of the body. The individual will go limp and collapse, regularly head first, and as a result facial and head injuries are common. There is no noticeable loss of consciousness and recovery is swift unless the person is injured.

Tonic–clonic seizure: A tonic–clonic seizure comprises two phases, the tonic phase and the clonic phase, which have been discussed above (also see Table 8).

**Neurodevelopmental Functionality**
Effort to locate the epileptogenic foci of a seizure is central to diagnosing the type and extent of behavioural and cognitive impairments that have resulted or would result following the onset of a seizure or surgery. Most neuropsychological tests and examinations have a longstanding validity and reliability in measuring and detecting CNS dysfunctionality that seriously undermines a patient's quality of life, functionality and productivity. The table below shows a neuropsychological pathway to accurate and appropriate diagnosis of behavioural, cognitive, personality, and mental impairment secondary to epileptic attacks.

**Interventions**

Three intervention strategies were adopted by the Centre for Advancement in Health (1996) as important and effective in helping patients in the community and they include self-management, mutual support and social awareness. Based on cost and how often they are prescribed, the following antiepileptic drugs used in treatment of seizure disorders: phenobarbital, phenytoin, Carbamazepine (CBZ), Valproate (VPA), and injectable diazepam (DZP), especially for status epilepticus. These two drugs are the cheapest and are prescribed in 65% to 85% of treated epileptic patients

<table>
<thead>
<tr>
<th>Information</th>
<th>Operational Description and Directives</th>
<th>Recommended neuro-psych Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient history and clinical interview</td>
<td>Get information on patient's developmental, family, past medical, social, and occupational histories. Play (pay) particular attention to: a) precipitating or etiologic factor, b) age at seizure onset; c) age of onset of chronic seizures; d) occurrence or frequency of febrile convulsion in infancy; e) developmental milestones, f) family information by parents, and vital information must be ascertained on ictal behaviour (what goes on at the time seizure occurs); g) history of treatment: when it started, by who, and what type of treatment modality used, current antiepileptic drugs used with dose and duration, other therapies tried, examine neurotoxic side effects</td>
<td>Must seek information from parent, legal guidance, spouse, neighbors, friends (especially those who know the patient very well (before, during and after epileptic attacks).)</td>
</tr>
<tr>
<td>Observation of ictal semiology</td>
<td>-Observe facial morphology to rule out or in of facial asymmetries which can be noticeable in 50-80% of TLE patients. -check for or ask for speech disturbances, especially during attack -check for or ask about motoric automatisms during seizure attacks, especially, forceful (forceful) turning of the head and eyes, and dystonic posturing of limbs</td>
<td>Observation and open/close-ended questions</td>
</tr>
<tr>
<td>Upper-Extremity Motor Examination</td>
<td>Check for and discern on lateralized dysfunction of the prefrontal cortex -help to distinguish patients with TLE from those with other seizure disorders.</td>
<td>-EEG -the Rapid Finger Oscillation Test (RFO) -the Purdue Pegboard Test -the Grooved Pegboard Test</td>
</tr>
<tr>
<td>Sensory-Perceptual Examination</td>
<td>-Assess visual-perceptual function and simple audition -conduct informal visual field examination and a tactile sensory test -observe tactile-sensory-perceptual deficits</td>
<td>-single and double simultaneous tactile stimulation Informal tests of visual fields and audition -Mesulam and Ewintraub Visual Screening Task</td>
</tr>
<tr>
<td>Attention</td>
<td>-Test reaction time, sustained concentration, focused attention, and</td>
<td>-the Trail Making Test, Part A &amp; B</td>
</tr>
</tbody>
</table>
**Controls, Concentration, and Executive functions**

- divided-attentional control
  - Predict left versus right and mesial versus lateral frontal lobe involvement.
  - Check for anticonvulsant toxicity or side effect of psychotropic medication where the patient is on mental health drug management.

- the Ruff Figural Fluency Test
- the Working Memory Index of the Wechsler Memory Scale (WMS-III)
- Competing Programs and Go/No-Go tasks

**Speech and language Examination**

- Check for expressive speech functions, using controlled oral word production, confrontation naming, sentence repetition, and rapid rote reading (with or without distractors)
- Check for interictal memory impairment (for patient with left TLE) with the presence of dysnomia.
- Check defect in fluidity of speech production and transient aphasia.

- Single letter and category-level verbal fluency test
- the Boston Naming Test

**Examination of Mnestic Function**

- Check issues of forgetfulness (amnesia)
- Conduct a comprehensive memory examination
- Check verbal-reasoning ability

- MMSE
- MSE
- Picture Completion Test

**Verbal Memory Examination**

- Check for encoding, storage, and recall (retrieval) of verbal information

- two subtests of the WMS-III: Verbal paired-Association, and Logical Memory I and II
- California Verbal Learning Test

**Examination of memory for Visually Represented Information**

- Observe the immediate and delayed recall production of novel (novel) graphic designs.
- Check for nonverbal mediation for encoding and later recall of novel stimuli.

- the Visual Reproduction I and II subtest of the WMS-II
- the Ray-Osterreith Complex Figure Test
- the Denmen Facial Recognition Memory Test
- the Biber Figure Learning Test

---

**Promoting Self-management**

This entails enhancing the sense of self-efficacy among the patients and their family members through development of self-management skills of epilepsy. Educational talks, workshops and seminars are conducted to enhance the sense of mastery, better compliance and coping capacity towards epilepsy.

**Enhancing Self-help Groups/Mutual Support**

A self-help group which serves as social support group can provide information, support and growth and change among the patients. Their sense of helplessness can be addressed by feelings of oneness, support and friendship. Having a positive attitude and a supportive network among the patients and their family members in need to face their illness instead of avoiding epilepsy is highly beneficial.

**Arousing Social Awareness**

Through the social media like television, radio, internet, community education programmes and awareness campaign, the general public should be aware about epilepsy, combating stigma and fostering a positive environment for the patients and family members are of parallel importance. A more informed public and positive attitude will also be of help.

**Conclusion**
With evidence from a significant number of studies in Nigeria, it is obvious that epilepsy has an adverse comorbidity with psychological, cognitive, psychiatric and social problems as major underlying factors in epilepsy (Okubadejo, Danesi, Aina, Ojini, Adeyemi & Olorunshola, 2007; Snyder, 1998). For example, Fatoye and colleagues (2006) found a statistically significant difference in anxiety and depression symptoms between patients with epilepsy and healthy controls. Anxiety symptoms were significantly associated with poly-pharmacotherapy while depression symptoms were significantly associated with longer duration of epilepsy. In his study among children, Iloeje (1989) reported that about 18% of the 580 epileptic patients attending an outpatient clinic in Eastern Nigeria (between 1985 and 1987) were developmentally and intellectually challenged. Episodes of status of epileptics, early age of onset of seizure and long delay in treatment were linked to neurodevelopmental disorders in children.

A more recent study using the Diagnostic Interview Schedule for children version IV (DISC-IV) by Adewuya and Ola (2005) examined anxiety and depressive disorders in 102 adolescents with epilepsy in South-west Nigeria. They reported prevalence of anxiety disorders on (in) 31.7% of patients, while depressive disorders in 28.43%. In this study, uncontrolled seizures and feeling of stigma were associated with anxiety or depressive disorders. Adewuya, Ola and Okeniyi (2005) in a larger study of 166 adolescents with epilepsy were interviewed using the DISC-IV, and the prevalence of all the psychiatric disorder was at 65.1%, where anxiety disorder was 33.1%; depressive disorder was 30.1, and disruptive behaviour disorder was 25.9%.

In another study by Adewuya (2006), in which the effect of parental psychopathology on the self rated quality of life (QOL) of adolescents with epilepsy was examined, the duration of illness, numbers of antiepileptic drugs and medication toxicity were significantly associated with poor QOL. The study also revealed that self rated depressive symptoms and general psychopathology in the patients was significantly associated with poorer self rated QOL in adolescents with epilepsy.

In Nigeria persons with epilepsy are stigmatized and as a result they suffer from social deprivation, discrimination in business, school, employment, housing and marriage. It has been noted that stigmatization, rather than the side effect of the antiepileptic medication, is associated with some acute psychological and personality problems suffered by persons with epilepsy.

From this perspective, Hung and colleagues (2008) reported that with stigmatization, parents have a low sense of efficacy and esteem in managing epilepsy. Some become very angry with their children, hide them in the house when they have visitors and even beat them when they misbehave as if they are the cause of their ailment. It was also revealed that about 70% of the parents agreed that they did not know much about epilepsy, and 55% showed that they did not know how to address the psychological needs of the children with epilepsy. It may be due to a lot of reasons like literacy level of the parents and availability of information that some parents succeed in the work as caregivers to their children with epilepsy. Furthermore, the prevalence of
Depressive symptoms among parents of children with epilepsy, and who do not understand the illness is 22.6%. High level of parental stress was also recorded, for this reason, psychological help that targets both patients and their parents has been advocated. This help should target, among other things, need for adequate knowledge, skills and support in parenting a child with epilepsy.

Epilepsy is an illness that affects people of different ages, races and religions, even the rich and the poor are affected as well, however, research as shown that about 85% of people with epilepsy come from (a) low-social economic families. It has also been discovered that it is associated with a lot of psychological problems for both client and the family members of which stigmatization and deprivations seem to be the highest. Self-management, self-help and social awareness among the patients and their caregivers, as well as the public will also be critical to enhance the quality of lives of patients and hence promote a more stigma-free and healthy society.

REFERENCES


Centre for Advancement in Health (1996). Indexed bibliography on Self management for People with Chronic Disease. Washington DC.


Meador, K.J. (2007). *Research Use of the New Quality-of-Life in Epilepsy Inventory.* Version of Record online


